United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with United States Department of Agriculture, Forest Service; Virginia Polytechnic Institute and State University; and Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation

Soil Survey of Bland County, Virginia

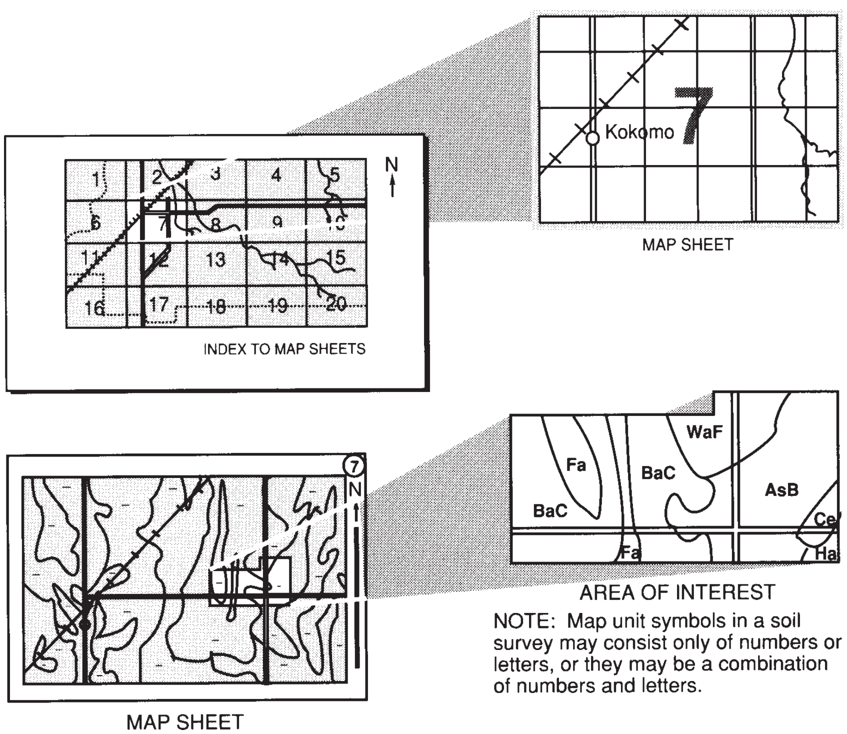
How To Use This Soil Survey

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and go to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Go to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 2003. Soil names and descriptions were approved in 2004. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2004. The most current official data are available at http://websoilsurvey.nrcs.usda.gov/app/. This survey was made cooperatively by the Natural Resources Conservation Service; the United States Department of Agriculture, Forest Service; the Virginia Polytechnic Institute and State University; and the Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation. The survey is part of the technical assistance furnished to the Big Walker Soil and Water Conservation District. The Bland County Board of Supervisors provided financial assistance for the survey.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: A view of the survey area looking northwest from the Walker Mountain Overlook, off U.S. Highway 52. The cleared areas are dominantly on Frederick and Watahala soils.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

Contents

Issued 2006

Foreword

This soil survey contains information that affects land use planning in Bland County. It includes predictions of soil behavior for selected land uses. The survey highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use the survey to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described, and information on specific uses is given. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

M. Denise Doetzer
State Conservationist
Natural Resources Conservation Service

Soil Survey of
Bland County, Virginia

By Robert K. Conner, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
United States Department of Agriculture, Forest Service; Virginia Polytechnic Institute and State University; and Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation

BLAND COUNTY is in the southwestern part of Virginia, about 65 miles southwest of Roanoke, Virginia (fig. 1). Bland County has a total area of 229,568 acres, or 358.7 square miles. The Jefferson National Forest, which covers 70,768 acres, or 111 square miles, is not included in this soil survey. This soil survey includes the 158,800 acres of privately owned land in the county. In 1990, the population of the survey area was 6,514 *(20)*. Bland, which is in the south-central part of the county, is the county seat.

Farming and forestry are the major land uses in the county. The survey area is about 55 percent woodland and 45 percent farmland. Most of the farms produce beef cattle, dairy products, corn, hay, and burley tobacco *(11)*.

This soil survey updates the soil survey of Bland County that was published in 1954 *(17)*. It provides additional information and soil maps with a photographic background.

General Nature of the Survey Area

This section provides general information about Bland County. It discusses early history; water resources; forest resources; recreation; transportation; land use; physiography, relief, and drainage; and climate.

Early History

Prior to the first settlements by Europeans in the 1750's and 1760's, the survey area was part of the hunting grounds of various eastern Native American tribes. Most of the early European settlers were of Scotch-Irish or German decent. Many of the first settlers came from neighboring areas in the New River Valley and settled in the valley sections along Walker Creek, Wolf Creek, and the North Fork of the Holston River. The Ceres community, once known as Bear Garden, was one of the first places in the survey area to be permanently settled.

Bland County was formed on March 30, 1861, from portions of Giles, Tazewell, and Wythe Counties. The county was named for Richard E. Bland, a prominent Virginia Statesman who led the Virginia colony into rebellion against Great Britain.

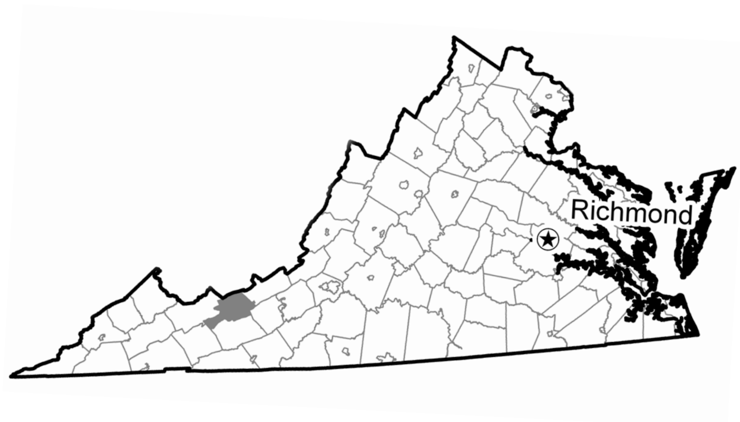


Figure 1.—Location of Bland County in Virginia.

Water Resources

Walker Creek and its tributaries, including Little Walker Creek and Kimberling Creek, and Wolf Creek are the major streams in the county. Walker Creek and Wolf Creek flow into the New River in Giles County, Virginia.

Water for residential use is available from wells and springs throughout the county. Ground water is hard in areas underlain by limestone. The quantity of ground water in the mountains is influenced by seasonal precipitation. Iron and sulfur influence the quality of the water in some areas that are underlain by acid shale.

Forest Resources

William R. Miller, Assistant Regional Forester, Virginia Department of Forestry, helped prepare this section.

Oak-hickory forests once covered most of Bland County. As the area was settled, the forests were cleared for agriculture and pasture. The fertile limestone valleys and ridges were the primary areas of settlement. Eventually, many steep knobs and the lower slopes of the bigger mountains were added to the agricultural area. For the most part, only the rough, steep, and inaccessible areas remained forestland.

In about 1990, the need for lumber and wood products grew and the best timber was removed from all of the remaining forest. The blight destroyed the American chestnut in the 1920's, and, at about the same time, agricultural land started reverting back to forest. Light-seeded species, such as yellow-poplar, black locust, maple, and pine, invaded the abandoned farmland as well as the areas once occupied by chestnut trees.

In 2001, the forest ownership in Bland County was 43 percent federal and 57 percent private. The dominant forest cover type is chestnut oak. This cover type is followed in extent by yellow-poplar/white oak/red oak, white oak/red oak/hickory, and mixed upland hardwoods. Eastern white pine is also a significant component of the forested areas in the county. It commonly occurs as pure stands but also occurs in mixtures with hardwoods. Between 1992 and 2001, the total volume of all live stems in Bland County was 277 million cubic feet and the net removal was almost 4 million cubic feet.

The quality of trees in Bland County varies from excellent in the moist coves and on the north-facing lower slopes to very poor on the dry, high ridgetops and west-facing slopes. Quality has been affected by wildfires and the high-grading type of harvests which periodically remove only the best stems of certain species. As a result, some areas contain a high percentage of trees not suitable for lumber. Recent improvement

in markets should allow more of these stems to be utilized and thus make way for new forests of young, better quality trees.

Recreation

Bland County has many areas which offer opportunities for various outdoor recreational activities. The Jefferson National Forest and the Appalachian Trail provide opportunities for fishing, hunting, hiking, camping, biking, and horseback riding.

Transportation

Four major highways serve Bland County. Interstate 77 and U.S. Route 52 provide access to points north and south through the central part of the county. State Route 42 crosses the lower part of the county and provides access to points east and west. State Route 61 crosses the upper part of the county and provides access to points east and west. Two major tunnels are along Interstate 77. In a northward direction, the Big Walker Mountain Tunnel begins at the base of Walker Mountain in Wythe County and exits in Bland County. The East River Mountain Tunnel begins at the base of East River Mountain in Bland County and exits in Mercer County, West Virginia.

Land Use

Farming and timber production are the major land uses in Bland County. About 83,400 acres in the county are farmland. Crops are harvested on about 14,000 acres. The valleys are used mainly for beef, dairy, and sheep production. The soils in the valleys are suited to pasture, hay, and grain crops. The nearly level to moderately steep soils are used for crop production. The moderately steep to very steep soils and the soils in areas that have rock outcrops are used as pasture or woodland (fig. 2). About 98,000 acres in the survey area are in woodland.

Residential, commercial, and industrial areas are in the valley sections of Bland County. Residential development is expanding into rural areas, especially along State Route 42 near Bland, Virginia. Commercial development is occurring along Interstate 77. Industrial development is concentrated in areas near Bland and Bastian. Manufactured products include electrical components, mining equipment, and fabricated metals. Other industries include a limestone quarry near Rocky Gap and a lumberyard in Hollybrook.

The Bland Correctional Center, a facility managed by the Virginia Department of Corrections, is located in the eastern part of the survey area along Route 42. It maintains 2,193 acres in agricultural production.

Physiography, Relief, and Drainage

Bland County is entirely within the Appalachian Ridge and Valley Major Land Resource Area. The county is largely mountainous and is characterized by intermingled valleys surrounded by rolling hills, knobs, and isolated mountain ridges. The soils on the mountains throughout the county mainly formed in residuum and colluvium from sandstone and shale. The soils in the rolling upland and valley areas dominantly formed in residuum from dolomitic limestone and chert and, in some areas, interbedded limestone and shale. Soils in the lower positions in the valleys formed in colluvium from the surrounding ridges and knobs.

The Tennessee Valley Divide crosses the western part of the survey area and breaks the drainage systems in the county into two sections. The larger portion of the county, east of the divide, drains into tributaries of the New River. The small portion of the county west of the divide drains into the North Fork of the Holston River.

Figure 2.—Timber production is a major land use in Bland County. Timber typically is grown on Oriskany, Lily, and Dekalb soils.

Elevation in the survey area ranges from about 1,900 feet, where Wolf Creek flows into Giles County, Virginia, to about 4,000 feet, on Chestnut Ridge in the western part of the county. The elevations of the valley floors in the survey area average about 2,350 feet. Most of the land in agricultural production is below an elevation of 2,600 feet.

Climate

Tables 1A and 1B give data on temperature and precipitation for the survey area as recorded at Staffordsville and Burkes Garden, Virginia, in the period 1971 to 2000. Tables 2A and 2B show probable dates of the first freeze in fall and the last freeze in spring. Tables 3A and 3B provide data on the length of the growing season.

In winter, the average temperature is 35.3 degrees F at Staffordsville and 31.7 degrees F at Burkes Garden. The average daily minimum temperature in winter is 25.1 degrees at Staffordsville and 21.8 degrees at Burkes Garden. The lowest recorded temperature at Staffordsville is –18, occurring on January 21, 1985, and that at Burkes Garden is -27, occurring on January 27, 1987. In summer, the average temperature is 70.4 degrees at Staffordsville and 65.9 degrees at Burkes Garden. The average daily maximum temperature in summer is 82.3 degrees at Staffordsville and 77.2 degrees at Burkes Garden. The highest temperature on record is 100 degrees at Staffordsville, recorded on August 16, 1988, and 96 degrees at Burkes Garden, recorded on July 16, 1954.

Growing degree days are shown in tables 1A and 1B. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The

normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

Average annual total precipitation is generally between 37 and 41 inches. It is as high as 46 inches in the highest parts of the western portion of the county. The 30-year average is 40.30 inches at Bland, Virginia, 39.61 inches at Staffordsville, and 45.71 inches at Burkes Garden (elevation of 3,300 feet). Approximately 19 inches falls between May and September in Bland. This is about 48 percent of the annual total precipitation. The growing season for most crops falls within this period. The heaviest 1-day rainfalls during the period of record are 4.73 inches at Bland, recorded on June 5, 1992; 4.92 inches at Staffordsville, recorded on June 28, 1995; and 4.56 inches at Burkes Garden, recorded on January 15, 1995. Thunderstorms occur on about 43 days each year, and most occur between May and August.

Average seasonal snowfall is somewhat variable across the county, primarily depending on elevation. The average annual total is 28.1 inches at Bland, 21.6 inches at Staffordsville, and 52.5 inches at Burkes Garden. The greatest snow depth at any one time during the period of record was 30 inches at Bland, recorded on March 14-15, 1993; 24 inches at Staffordsville, recorded on January 8, 1996; and 21 inches at Burkes Garden, recorded on January 28, 1998. On average, about 15 to 20 days per year have at least 1 inch of snow on the ground at the lower elevations and nearly 40 days per year have snow on the ground at the higher elevations, including 37 days at Burkes Garden. The heaviest 1-day snowfalls on record were all set in a 36-hour storm on March 13-14, 1993. They were 29.5 inches at Bland, 19.5 inches at Staffordsville, and 25 inches at Burkes Garden.

The average relative humidity in mid-afternoon is about 48 percent in April and about 60 percent in mid-winter. Humidity is higher at night, and the average at dawn is about 80 percent in winter and 90 percent in summer. The sun shines about 63 percent of the time possible in summer and about 42 percent in winter. The prevailing wind typically is from the southwest; it is from the northeast in August through October. Average windspeed is highest, around 7 miles per hour, in March and April.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a

limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

Detailed Soil Map Units

The map units delineated on the detailed soil maps represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase

commonly indicates a feature that affects use or management. For example, Frederick silt loam, 8 to 15 percent slopes, is a phase of the Frederick series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Berks-Weikert complex, 8 to 15 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Frederick and Watahala soils, karst, 8 to 15 percent slopes, is an undifferentiated group in this survey area.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Quarries, limestone, is an example.

Table 4 lists the map units in this survey area. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

1B—Alonzville silt loam, 3 to 8 percent slopes, rarely flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Low stream terraces (fig. 3)
Position on the landform: Treads
Elevation: 1,900 to 2,600 feet
Size of areas: 2 to 30 acres

Map Unit Composition

Alonzville and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 6 inches—dark yellowish brown silt loam

Subsoil:
6 to 11 inches—brown silt loam
11 to 28 inches—strong brown silty clay loam; strong brown mottles
28 to 37 inches—strong brown silt loam; brownish yellow mottles and light gray iron depletions

Substratum:
37 to 62 inches—brown very gravelly sandy loam; reddish yellow iron-manganese masses

Minor Components

Dissimilar components:
- Philo soils, which are moderately well drained, are more susceptible to flooding than the Alonzville soil, and have more sand and less clay; on flood plains

Figure 3.—Recently cultivated fields and small commercial buildings in an area of Alonzville silt loam, 3 to 8 percent slopes, rarely flooded. This soil is a prime farmland soil and is extensively cropped in the survey area. Flooding is a management concern for urban uses.

- Nicelytown soils, which are not susceptible to flooding and are moderately well drained; on the higher stream terraces

Similar components:
- Pope soils, which are more susceptible to flooding than the Alonzville soil and have more sand and less clay; on flood plains
- Tumbling soils, which are not susceptible to flooding and have more clay than the Alonzville soil; on footslopes at the base of hills
- Soils that are on slopes of less than 3 percent and more than 8 percent; on landforms similar to those of the Alonzville soil
- Soils that have gravelly or cobbly surface layers; on landforms similar to those of the Alonzville soil

Soil Properties and Qualities

Available water capacity: Moderate (about 7.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: Rare
Ponding hazard: Occasional
Depth of ponding: 0.3 to 1.0 foot
Shrink-swell potential: Low
Runoff class: Negligible
Surface fragments: None
Parent material: Fine-loamy alluvium derived from sandstone, siltstone, and shale

Use and Management Considerations

Cropland

Suitability: Well suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak
- Ponding restricts the safe use of roads by log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Flooding and ponding are limitations affecting building site development.

Septic tank absorption fields

- Ponding is a limitation affecting septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of the soil.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: L
Hydric soil: No

2A—Atkins fine sandy loam, 0 to 3 percent slopes, frequently flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains along small creeks (fig. 4)
Position on the landform: Flood-plain steps and backswamps
Elevation: 1,900 to 2,600 feet
Size of areas: 2 to 30 acres

Map Unit Composition

Atkins and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Figure 4.—Hydrophitic vegetation in an area of Atkins fine sandy loam, 0 to 3 percent slopes, frequently flooded.

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown fine sandy loam; yellowish brown masses of oxidized iron

Subsurface layer:
3 to 9 inches—gray fine sandy loam; yellowish brown masses of oxidized iron

Subsoil:
9 to 23 inches—gray sandy loam; yellowish brown masses of oxidized iron
23 to 37 inches—dark gray sandy loam; yellowish brown masses of oxidized iron

Substratum:
37 to 56 inches—dark gray gravelly sandy loam; yellowish brown masses of oxidized iron
56 to 62 inches—dark gray silty clay loam; yellowish brown masses of oxidized iron

Minor Components

Dissimilar components:
- Ogles soils, which are well drained and have more rock fragments in the soil than the Atkins soil; on similar landforms
- Philo soils, which are moderately well drained; on landforms similar to those of the Atkins soil
- Pope soils, which are well drained; on landforms similar to those of the Atkins soil

Similar components:
- Maurertown soils, which are less susceptible to flooding and have more clay than the Atkins soil; on low stream terraces
- Soils that have dark surface layers; on landforms similar to those of the Atkins soil
- Soils that have cobbly or gravelly surface layers; on landforms similar to those of the Atkins soil
- Soils that are nonacid; on landforms similar to those of the Atkins soil

Soil Properties and Qualities

Available water capacity: Moderate (about 6.5 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr or 0.4 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Poorly drained
Depth to seasonal water saturation: About 0 to 12 inches
Water table kind: Apparent
Flooding hazard: Frequent
Ponding hazard: Frequent
Depth of ponding: 0.1 to 1.0 foot
Shrink-swell potential: Low
Runoff class: Negligible
Surface fragments: None
Parent material: Fine-loamy alluvium derived from sandstone, siltstone, and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Well suited
- Flooding may damage pastures.
- The seasonal high water table can affect equipment use, grazing patterns, and the viability of grass and legume species.
- Frost action may damage the root systems of plants.

Woodland

Suitability: Moderately suited to loblolly pine and sweetgum
- Flooding may damage haul roads.
- Flooding and ponding restrict the safe use of roads by log trucks.
- Soil wetness may limit the use of log trucks.
- The maintenance of haul roads and log landings is increased because of the coarse textured soil layers.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.

Building sites

- Flooding and ponding are limitations affecting building site development.
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- Flooding and ponding are limitations affecting septic tank absorption fields.

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Flooding may damage local roads and streets.
- Ponding affects the ease of excavation and grading and limits the bearing capacity of the soil.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6w
Virginia soil management group: NN
Hydric soil: Yes

3D—Bailegap fine sandy loam, 15 to 35 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits, shoulders, and backslopes
Elevation: 2,348 to 3,850 feet
Size of areas: 10 to 100 acres

Map Unit Composition

Bailegap and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material
1 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 4 inches—brown fine sandy loam

Subsurface layer:
4 to 9 inches—reddish brown fine sandy loam

Subsoil:
9 to 28 inches—yellowish red loam
28 to 43 inches—reddish brown clay loam

Soft bedrock:
43 to 46 inches—reddish brown bedrock

Hard bedrock:
46 inches—bedrock

Minor Components

Dissimilar components:
- Calvin soils, which are moderately deep to siltstone bedrock and have more rock fragments in the soil than the Bailegap soil; on similar landforms
- Dekalb soils, which are moderately deep to sandstone bedrock and have more rock fragments in the soil than the Bailegap soil; on similar landforms

- Oriskany soils, which are very deep to bedrock and have more rock fragments in the soil than the Bailegap soil; on footslopes at the base of hills and mountains
- Areas of widely scattered rock outcrops; on landforms similar to those of the Bailegap soil

Similar components:
- Lily soils, which are moderately deep to sandstone bedrock; on landforms similar to those of the Bailegap soil
- Gilpin soils, which are moderately deep to shale bedrock; on landforms similar to those of the Bailegap soil
- Jefferson soils, which are very deep to bedrock; on footslopes at the base of hills and mountains
- Soils that are on slopes of less than 15 percent; on landforms similar to those of the Bailegap soil
- Soils that have more stones or fewer stones on the surface than the Bailegap soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 6.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 μm/sec)
Depth class: Deep (40 to 60 inches)
Depth to root-restrictive feature: 40 to 60 inches to bedrock (paralithic and lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.1 to 3.0 percent subangular stones
Parent material: Fine-loamy residuum weathered from sandstone, siltstone, and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak, chestnut oak, and eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: GG
Hydric soil: No

4E—Bailegap-Lily-Dekalb complex, 35 to 70 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Backslopes
Elevation: 2,600 to 3,850 feet
Size of areas: 25 to 500 acres

Map Unit Composition

Note: These Bailegap, Lily, and Dekalb soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Bailegap and similar soils: Typically 35 percent, ranging from about 30 to 40 percent
Lily and similar soils: Typically 30 percent, ranging from about 25 to 35 percent
Dekalb and similar soils: Typically 25 percent, ranging from about 20 to 25 percent

Typical Profile

Bailegap

Organic layer:
0 to 1 inch—slightly decomposed plant material
1 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 4 inches—brown fine sandy loam

Subsurface layer:
4 to 9 inches—reddish brown fine sandy loam

Subsoil:
9 to 28 inches—yellowish red loam
28 to 43 inches—reddish brown clay loam

Soft bedrock:
43 to 46 inches—reddish brown bedrock

Hard bedrock:
46 inches—bedrock

Lily

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 7 inches—brown sandy loam

Subsoil:
7 to 13 inches—yellowish brown sandy loam
13 to 24 inches—yellowish brown clay loam

Substratum:
24 to 30 inches—yellowish brown sandy loam

Hard bedrock:
30 inches—sandstone bedrock

Dekalb

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 5 inches—dark brown channery sandy loam

Subsoil:
5 to 24 inches—yellowish brown very channery sandy loam

Substratum:
24 to 31 inches—yellowish brown extremely channery sandy loam

Hard bedrock:
31 inches—sandstone bedrock

Minor Components

Dissimilar components:
- Berks soils, which are moderately deep to shale bedrock, have more rock fragments in the soil than the Bailegap and Lily soils, and have less sand than the Dekalb soil; on similar landforms
- Oriskany soils, which are very deep to bedrock and have more rock fragments in the soil than the Bailegap and Lily soils; on footslopes at the base of hills and mountains
- Soils that are shallow to hard bedrock; on landforms similar to those of the major soils

Similar components:
- Calvin soils, which are moderately deep to siltstone bedrock; on landforms similar to those of the major soils
- Soils that have less clay and more sand in the subsoil than the Bailegap, Lily, and Dekalb soils; on similar landforms

Soil Properties and Qualities

Available water capacity: Bailegap—moderate (about 6.3 inches); Lily—low (about 3.9 inches); Dekalb—very low (about 2.1 inches)
Slowest saturated hydraulic conductivity: Bailegap and Lily—moderately high (about 0.6 in/hr or 4.2 µm/sec); Dekalb—high (about 2.0 in/hr or 14.1 µm/sec)
Depth class: Deep (40 to 60 inches); Lily and Dekalb—moderately deep (20 to 40 inches)
Depth to root-restrictive feature: Bailegap—40 to 60 inches to bedrock (paralithic and lithic); Lily and Dekalb—20 to 40 inches to bedrock (lithic)

Drainage class: Bailegap and Lily—well drained; Dekalb—somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Bailegap—high; Lily and Dekalb—very high
Surface fragments: About 0.1 to 3.0 percent subangular stones
Parent material: Baileygap—fine-loamy residuum weathered from sandstone, siltstone, and shale; Lily—fine-loamy residuum weathered from sandstone; Dekalb—gravelly, loamy residuum weathered from sandstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak, chestnut oak, and eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the slope, the use of mechanical planting equipment is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the coarseness of the soil material, the traction of wheeled harvest equipment and log trucks may be reduced.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- The low soil strength may result in structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Bailegap—GG; Lily—U; Dekalb—FF
Hydric soils: No

5C—Berks-Weikert complex, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits and shoulders
Elevation: 2,000 to 3,550 feet
Size of areas: 10 to 100 acres

Map Unit Composition

Note: These Berks and Weikert soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Weikert and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 5 inches—brown very channery silt loam

Subsoil:
5 to 15 inches—yellowish brown channery silt loam
15 to 26 inches—brownish yellow very channery silt loam

Substratum:
26 to 28 inches—strong brown extremely channery silt loam

Soft bedrock:
28 inches—shale bedrock

Weikert

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown channery silt loam

Subsurface layer:
3 to 6 inches—yellowish brown very channery silt loam

Subsoil:
6 to 11 inches—yellowish brown extremely channery silt loam

Substratum:
11 to 17 inches—yellowish brown extremely channery silt loam

Soft bedrock:
17 inches—shale bedrock

Minor Components

Dissimilar components:
- Gilpin soils, which are moderately deep to shale bedrock and have fewer rock fragments in the soil than the Berks and Weikert soils; on similar landforms

- Nicelytown soils, which are very deep to bedrock and moderately well drained; on footslopes at the base of hills
- Shelocta soils, which are very deep to bedrock and have fewer rock fragments in the soil than the Berks and Weikert soils; on footslopes at the base of hills

Similar components:
- Rough soils, which are very shallow to shale bedrock; on landforms similar to those of the Berks and Weikert soils
- Soils that are on slopes of less than 8 percent; on landforms similar to those of the Berks and Weikert soils
- Soils that have fewer rock fragments in the subsoil than the Berks and Weikert soils; on similar landforms
- Soils that have very stony surfaces; on landforms similar to those of the Berks and Weikert soils

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.1 inches); Weikert—very low (about 1.3 inches)
Slowest saturated hydraulic conductivity: Berks—moderately high (about 0.6 in/hr or 4.2 μm/sec); Weikert—high (about 2.0 in/hr or 14.1 μm/sec)
Depth class: Berks—moderately deep (20 to 40 inches); Weikert—shallow (10 to 20 inches)
Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Weikert—10 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

Suitability: Moderately suited to grass-legume hay; poorly suited to corn; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock restricts the rooting depth of crops.
- Because of the limited available water capacity, plants may suffer from moisture stress.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- Bedrock may interfere with the construction of haul roads and log landings.

- Because of the slope, conditions for operating machinery are unsafe, the operating efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.
- The maintenance of haul roads and log landings is increased because of the coarse textured soil layers.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Berks—3e; Weikert—6s
Virginia soil management group: JJ
Hydric soils: No

5D—Berks-Weikert complex, 15 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits, shoulders, and backslopes
Elevation: 2,000 to 3,550 feet
Size of areas: 10 to 100 acres

Map Unit Composition

Note: These Berks and Weikert soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Weikert and similar soils: Typically 35 percent, ranging from about 30 to 40 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 5 inches—brown very channery silt loam

Subsoil:
5 to 15 inches—yellowish brown channery silt loam
15 to 26 inches—brownish yellow very channery silt loam

Substratum:
26 to 28 inches—strong brown extremely channery silt loam

Soft bedrock:
28 inches—shale bedrock

Weikert

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown channery silt loam

Subsurface layer:
3 to 6 inches—yellowish brown very channery silt loam

Subsoil:
6 to 11 inches—yellowish brown extremely channery silt loam

Substratum:
11 to 17 inches—yellowish brown extremely channery silt loam

Soft bedrock:
17 inches—shale bedrock

Minor Components

Dissimilar components:
- Gilpin soils, which are moderately deep to shale bedrock and have fewer rock fragments in the soil than the Berks and Weikert soils; on similar landforms
- Nicelytown soils, which are very deep to bedrock and moderately well drained; on footslopes at the base of hills
- Shelocta soils, which are very deep to bedrock and have fewer rock fragments in the soil than the Berks and Weikert soils; on footslopes at the base of hills

Similar components:
- Rough soils, which are very shallow to shale bedrock; on landforms similar to those of the Berks and Weikert soils
- Soils that are on slopes of less than 15 percent; on landforms similar to those of the Berks and Weikert soils
- Soils that have fewer rock fragments in the subsoil than the Berks and Weikert soils; on similar landforms
- Soils that have very stony surfaces; on landforms similar to those of the Berks and Weikert soils

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.1 inches); Weikert—very low (about 1.3 inches)
Slowest saturated hydraulic conductivity: Berks—moderately high (about 0.6 in/hr or 4.2 μm/sec); Weikert—high (about 2.0 in/hr or 14.1 μm/sec)
Depth class: Berks—moderately deep (20 to 40 inches); Weikert—shallow (10 to 20 inches)
Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Weikert—10 to 20 inches to bedrock (lithic)
Drainage class: Well drained

Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: JJ
Hydric soils: No

5E—Berks-Weikert complex, 35 to 70 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Shoulders and backslopes
Elevation: 2,000 to 3,550 feet
Size of areas: 10 to 100 acres

Map Unit Composition

Note: These Berks and Weikert soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Weikert and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 5 inches—brown very channery silt loam

Subsoil:
5 to 15 inches—yellowish brown channery silt loam
15 to 26 inches—brownish yellow very channery silt loam

Substratum:
26 to 28 inches—strong brown extremely channery silt loam

Soft bedrock:
28 inches—shale bedrock

Weikert

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown channery silt loam

Subsurface layer:
3 to 6 inches—yellowish brown very channery silt loam

Subsoil:
6 to 11 inches—yellowish brown extremely channery silt loam

Substratum:
11 to 17 inches—yellowish brown extremely channery silt loam

Soft bedrock:
17 inches—shale bedrock

Minor Components

Dissimilar components:
- Gilpin soils, which are moderately deep to shale bedrock and have fewer rock fragments in the soil than the Berks and Weikert soils; on similar landforms

- Nicelytown soils, which are very deep to bedrock and moderately well drained; on footslopes at the base of hills
- Shelocta soils, which are very deep to bedrock and have fewer rock fragments in the soil than the Berks and Weikert soils; on footslopes at the base of hills

Similar components:
- Rough soils, which are very shallow to shale bedrock; on landforms similar to those of the Berks and Weikert soils
- Soils that have fewer rock fragments in the subsoil than the Berks and Weikert soils; on similar landforms
- Soils that have very stony surfaces; on landforms similar to those of the Berks and Weikert soils

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.1 inches); Weikert—very low (about 1.3 inches)
Slowest saturated hydraulic conductivity: Berks—moderately high (about 0.6 in/hr or 4.2 μm/sec); Weikert—high (about 2.0 in/hr or 14.1 μm/sec)
Depth class: Berks—moderately deep (20 to 40 inches); Weikert—shallow (10 to 20 inches)
Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Weikert—10 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soils: No

6D—Bland silty clay loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Summits and shoulders
Elevation: 2,200 to 3,400 feet
Size of areas: 10 to 100 acres

Map Unit Composition

Bland and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Surface layer:
0 to 4 inches—reddish gray silty clay loam

Subsoil:
4 to 18 inches—reddish brown silty clay
18 to 30 inches—weak red silty clay; yellowish red mottles

Substratum:
30 to 36 inches—dusky red channery clay

Hard bedrock:
36 inches—limestone bedrock

Minor Components

Dissimilar components:
- Beech Grove soils, which are very shallow to limestone bedrock; on landforms similar to those of the Bland soil
- Rock outcrops on landforms similar to those of the Bland soil

Similar components:
- Carbo soils, which have browner colors than the Bland soil; on similar landforms
- Culleoka soils, which have less clay than the Bland soil; on similar landforms
- Westmoreland soils, which are deep to shale bedrock and have less clay than the Bland soil; on similar landforms

- Soils that are on slopes of less than 15 percent; on landforms similar to those of the Bland soil
- Soils that are shallow to hard bedrock; on landforms similar to those of the Bland soil

Soil Properties and Qualities

Available water capacity: Low (about 4.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr or 1.4 μm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Very high
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to grass-legume hay; poorly suited to corn; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock and high clay content restrict the rooting depth of crops.
- Clods may form if the soil is tilled when wet.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak
- Bedrock may interfere with the construction of haul roads and log landings.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: Y
Hydric soil: No

6E—Bland silty clay loam, 25 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Shoulders and backslopes
Elevation: 2,200 to 3,400 feet
Size of areas: 25 to 200 acres

Map Unit Composition

Bland and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 4 inches—reddish gray silty clay loam

Subsoil:
4 to 18 inches—reddish brown silty clay
18 to 30 inches—weak red silty clay; yellowish red mottles

Substratum:
30 to 36 inches—dusky red channery clay

Hard bedrock:
36 inches—limestone bedrock

Minor Components

Dissimilar components:
- Beech Grove soils, which are very shallow to limestone bedrock; on landforms similar to those of the Bland soil
- Rock outcrops on landforms similar to those of the Bland soil

Similar components:
- Carbo soils, which have browner colors than the Bland soil; on similar landforms
- Culleoka soils, which have less clay than the Bland soil; on similar landforms
- Westmoreland soils, which are deep to shale bedrock and have less clay than the Bland soil; on similar landforms
- Soils that are on slopes of more than 35 percent; on landforms similar to those of the Bland soil
- Soils that are shallow to hard bedrock; on landforms similar to those of the Bland soil

Soil Properties and Qualities

Available water capacity: Low (about 4.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr or 1.4 μm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Very high
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This soil unsuited to cropland.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: Y
Hydric soil: No

7D—Brushy extremely gravelly loam, 8 to 35 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits, shoulders, and backslopes
Elevation: 2,400 to 3,850 feet
Size of areas: 5 to 750 acres

Map Unit Composition

Brushy and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 7 inches—dark yellowish brown extremely gravelly loam

Subsurface layer:
7 to 13 inches—pale brown very gravelly loam

Subsoil:
13 to 27 inches—yellowish brown very gravelly clay loam
27 to 34 inches—brown very gravelly clay loam

Hard bedrock:
34 inches—chert bedrock

Minor Components

Dissimilar components:
- Lily soils, which have fewer rock fragments in the soil than the Brushy soil; on similar landforms
- Oriskany soils, which are very deep to bedrock; on footslopes at the base of hills and mountains
- Soils that are very deep to hard bedrock; on landforms similar to those of the Brushy soil
- Rock outcrops on landforms similar to those of the Brushy soil

Similar components:
- Dekalb soils, which are moderately deep to sandstone bedrock; on landforms similar to those of the Brushy soil
- Soils that are deep to hard bedrock; on landforms similar to those of the Brushy soil
- Soils that are shallow to hard bedrock; on landforms similar to those of the Brushy soil
- Soils that have fewer surface stones than the Brushy soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Very low (about 1.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 0.1 to 3.0 percent subangular stones
Parent material: Gravelly, loamy residuum weathered from chert and cherty limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Well suited to chestnut oak; moderately suited to northern red oak
- Bedrock may interfere with the construction of haul roads and log landings.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.

- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope and the content of rock fragments, the use of mechanical planting equipment is impractical.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The maintenance of haul roads and log landings is increased because of the coarse textured soil layers.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the coarseness of the soil material, the traction of wheeled harvest equipment and log trucks may be reduced.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: JJ
Hydric soil: No

7E—Brushy extremely gravelly loam, 35 to 55 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Shoulders and backslopes
Elevation: 2,400 to 3,850 feet
Size of areas: 10 to 250 acres

Map Unit Composition

Brushy and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 7 inches—dark yellowish brown extremely gravelly loam

Subsurface layer:
7 to 13 inches—pale brown very gravelly loam

Subsoil:
13 to 27 inches—yellowish brown very gravelly clay loam
27 to 34 inches—brown very gravelly clay loam

Hard bedrock:
34 inches—chert bedrock

Minor Components

Dissimilar components:
- Lily soils, which have fewer rock fragments in the soil than the Brushy soil; on similar landforms
- Oriskany soils, which are very deep to bedrock; on footslopes at the base of hills and mountains
- Soils that are very deep to hard bedrock; on landforms similar to those of the Brushy soil
- Rock outcrops on landforms similar to those of the Brushy soil

Similar components:
- Dekalb soils, which are moderately deep to sandstone bedrock; on landforms similar to those of the Brushy soil
- Soils that are deep to hard bedrock; on landforms similar to those of the Brushy soil
- Soils that are shallow to hard bedrock; on landforms similar to those of the Brushy soil
- Soils that have fewer surface stones than the Brushy soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Very low (about 1.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 μm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 0.1 to 3.0 percent subangular stones
Parent material: Gravelly, loamy residuum weathered from chert and cherty limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Well suited to chestnut oak; moderately suited to northern red oak

- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the slope and the content of rock fragments, the use of mechanical planting equipment is impractical.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The maintenance of haul roads and log landings is increased because of the coarse textured soil layers.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the coarseness of the soil material, the traction of wheeled harvest equipment and log trucks may be reduced.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soil: No

8D—Calvin channery silt loam, 15 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits, shoulders, and backslopes
Elevation: 2,200 to 4,000 feet
Size of areas: 5 to 100 acres

Map Unit Composition

Calvin and similar soils: Typically 80 percent, ranging from about 75 to 85 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 4 inches—dark reddish brown channery silt loam

Subsoil:
4 to 9 inches—reddish brown channery silt loam
9 to 21 inches—reddish brown very channery silt loam

Substratum:
21 to 27 inches—reddish brown extremely channery silt loam

Hard bedrock:
27 inches—siltstone bedrock

Minor Components

Dissimilar components:
- Gilpin soils, which have browner colors and fewer rock fragments in the soil than the Calvin soil; on similar landforms
- Rough soils, which are very shallow to shale bedrock; on landforms similar to those of the Calvin soil

Similar components:
- Berks soils, which have browner colors than the Calvin soil; on similar landforms
- Weikert soils, which are shallow to shale bedrock and have browner colors than the Calvin soil; on similar landforms
- Soils on slopes of less than 15 percent; on landforms similar to those of the Calvin soil

Soil Properties and Qualities

Available water capacity: Low (about 3.2 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr or 14.1 µm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- Conditions for log trucks may be unsafe because of the low soil strength.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: JJ
Hydric soil: No

8E—Calvin channery silt loam, 35 to 70 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits, shoulders, and backslopes
Elevation: 2,200 to 4,000 feet
Size of areas: 10 to 150 acres

Map Unit Composition

Calvin and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 4 inches—dark reddish brown channery silt loam

Subsoil:
4 to 9 inches—reddish brown channery silt loam
9 to 21 inches—reddish brown very channery silt loam

Substratum:
21 to 27 inches—reddish brown extremely channery silt loam

Hard bedrock:
27 inches—siltstone bedrock

Minor Components

Dissimilar components:
- Gilpin soils, which have browner colors and fewer rock fragments in the soil than the Calvin soil; on similar landforms
- Rough soils, which are very shallow to shale bedrock; on landforms similar to those of the Calvin soil
- Shelocta soils, which are very deep to bedrock and have fewer rock fragments in the soil than the Calvin soil; on footslopes at the base of hills and mountains
- Areas of widely scattered rock outcrops on landforms similar to those of the Calvin soil

Similar components:
- Berks soils, which have browner colors than the Calvin soil; on similar landforms
- Weikert soils, which are shallow to shale bedrock and have browner colors than the Calvin soil; on similar landforms
- Soils on slopes of more than 70 percent; on landforms similar to those of the Calvin soil

Soil Properties and Qualities

Available water capacity: Low (about 3.2 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr or 14.1 µm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.

- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the slope, the use of mechanical planting equipment is impractical.
- Conditions for log trucks may be unsafe because of the low soil strength.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soil: No

9D—Calvin channery silt loam, 15 to 35 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits, shoulders, and backslopes
Elevation: 2,200 to 4,000 feet
Size of areas: 10 to 150 acres

Map Unit Composition

Calvin and similar soils: Typically 80 percent, ranging from about 75 to 85 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 4 inches—dark reddish brown channery silt loam

Subsoil:
4 to 9 inches—reddish brown channery silt loam
9 to 21 inches—reddish brown very channery silt loam

Substratum:
21 to 27 inches—reddish brown extremely channery silt loam

Hard bedrock:
27 inches—siltstone bedrock

Minor Components

Dissimilar components:
- Bailegap soils, which are deep to sandstone bedrock and have fewer rock fragments in the soil than the Calvin soil; on similar landforms
- Rough soils, which are very shallow to shale bedrock; on landforms similar to those of the Calvin soil
- Culleoka soils, which have fewer rock fragments in the soil than the Calvin soil; on similar landforms
- Westmoreland soils, which are deep to bedrock and have fewer rock fragments in the soil than the Calvin soil; on similar landforms
- Areas of widely scattered rock outcrops on landforms similar to those of the Calvin soil

Similar components:
- Berks soils, which have browner colors than the Calvin soil; on similar landforms
- Dekalb soils, which are moderately deep to sandstone bedrock and have browner colors and more sand than the Calvin soil; on similar landforms
- Soils that are shallow to hard bedrock; on landforms similar to those of the Calvin soil
- Soils on slopes of less than 15 percent; on landforms similar to those of the Calvin soil
- Soils that have fewer surface stones than the Calvin soil; on similar landforms
- Soils that have more surface stones than the Calvin soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Low (about 3.2 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr or 14.1 μm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.1 to 3.0 percent subangular stones
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.

- Because of the slope, the use of mechanical planting equipment is impractical.
- Conditions for log trucks may be unsafe because of the low soil strength.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: JJ
Hydric soil: No

10E—Calvin-Rough complex, 35 to 70 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits, shoulders, and backslopes
Elevation: 2,200 to 4,000 feet
Size of areas: 10 to 150 acres

Map Unit Composition

Note: These Calvin and Rough soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Calvin and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Rough and similar soils: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Calvin

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 4 inches—dark reddish brown channery silt loam

Subsoil:
4 to 9 inches—reddish brown channery silt loam
9 to 21 inches—reddish brown very channery silt loam

Substratum:
21 to 27 inches—reddish brown extremely channery silt loam

Hard bedrock:
27 inches—siltstone bedrock

Rough

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 3 inches—brown channery silt loam

Subsoil:
3 to 6 inches—yellowish brown very channery silt loam

Substratum:
6 to 8 inches—yellowish brown extremely channery silt loam

Hard bedrock:
8 inches—shale bedrock

Minor Components

Dissimilar components:
- Bailegap soils, which are deep to sandstone bedrock and have fewer rock fragments in the soil than the Calvin and Rough soils; on similar landforms
- Culleoka soils, which have fewer rock fragments in the soil than the Calvin and Rough soils; on similar landforms
- Westmoreland soils, which are deep to bedrock and have fewer rock fragments in the soil than the Calvin and Rough soils; on similar landforms
- Areas of widely scattered rock outcrops on landforms similar to those of the Calvin and Rough soils

Similar components:
- Berks soils, which have browner colors than the Calvin and Rough soils; on similar landforms
- Dekalb soils, which are moderately deep to sandstone bedrock and have browner colors and more sand than the Calvin and Rough soils; on similar landforms
- Soils that are shallow to hard bedrock; on landforms similar to those of the Calvin and Rough soils
- Soils that are on slopes of more than 70 percent; on landforms similar to those of the Calvin and Rough soils
- Soils that have fewer or more surface stones than the Calvin and Rough soils; on similar landforms

Soil Properties and Qualities

Available water capacity: Calvin—low (about 3.2 inches); Rough—very low (about 0.9 inch)
Slowest saturated hydraulic conductivity: Calvin—high (about 2.0 in/hr or 14.1 μm/sec); Rough—moderately high (about 0.6 in/hr or 4.2 μm/sec)
Depth class: Calvin—moderately deep (20 to 40 inches); Rough—very shallow (less than 10 inches)
Depth to root-restrictive feature: Calvin—20 to 40 inches to bedrock (lithic); Rough—4 to 10 inches to bedrock (lithic)
Drainage class: Calvin—well drained; Rough—somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None

Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Calvin—high; Rough—very high
Surface fragments: About 0.1 to 3.0 percent subangular stones
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soils: No

11D—Carbo-Rock outcrop complex, 8 to 35 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills (fig. 5)
Position on the landform: Summits, shoulders, and backslopes

Figure 5.—An area of Carbo-Rock outcrop complex, 8 to 35 percent slopes, eroded. The limestone outcrops are limitations affecting pasture maintenance. A severely eroded spot is evident in this photograph.

Elevation: 1,900 to 3,250 feet
Size of areas: 10 to 200 acres
Note: Erosion has removed some of the original surface layer and has exposed the subsoil in places; some areas may have intricate patterns of erosion, ranging from uneroded to severely eroded small areas

Map Unit Composition

Note: This Carbo soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Carbo and similar soils: Typically 60 percent, ranging from about 55 to 65 percent
Rock outcrop: Typically 25 percent, ranging from about 15 to 35 percent

Typical Profile

Carbo

Surface layer:
0 to 5 inches—brown silty clay loam

Subsoil:
5 to 24 inches—brown clay; manganese masses

Hard bedrock:
24 inches—limestone bedrock

Rock outcrop

This part of the map unit consists of outcrops of grayish hard limestone bedrock that are a few inches to about 5 feet high.

Minor Components

Dissimilar components:
- Frederick soils, which are very deep to bedrock; on landforms similar to those of the Carbo soil
- Watahala soils, which are very deep to bedrock and have more chert fragments in the soil than the Carbo soil; on similar landforms

Similar components:
- Beech Grove soils, which are very shallow to limestone bedrock; on landforms similar to those of the Carbo soil
- Soils that are deep to hard bedrock; on landforms similar to those of the Carbo soil
- Soils that are shallow to hard bedrock; on landforms similar to those of the Carbo soil

Properties and Qualities of the Carbo Soil

Available water capacity: Low (about 3.0 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr or 0.4 µm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: Very high
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak
- Bedrock may interfere with the construction of haul roads and log landings.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Carbo—7s; Rock outcrop—8s
Virginia soil management group: Carbo—Y; Rock outcrop—none assigned
Hydric soil: No

11E—Carbo-Rock outcrop complex, 35 to 55 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Shoulders and backslopes
Elevation: 1,900 to 3,250 feet
Size of areas: 20 to 500 acres
Note: Erosion has removed some of the original surface layer and has exposed the subsoil in places; some areas may have intricate patterns of erosion, ranging from uneroded to severely eroded small areas.

Map Unit Composition

Note: This Carbo soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Carbo and similar soils: Typically 60 percent, ranging from about 55 to 65 percent
Rock outcrop: Typically 25 percent, ranging from about 15 to 35 percent

Typical Profile

Carbo

Surface layer:
0 to 5 inches—brown silty clay loam

Subsoil:
5 to 24 inches—brown clay; manganese masses

Hard bedrock:
24 inches—limestone bedrock

Rock outcrop

This part of the map unit consists of outcrops of grayish hard limestone bedrock that are few inches to about 5 feet high.

Minor Components

Dissimilar components:
- Frederick soils, which are very deep to bedrock; on landforms similar to those of the Carbo soil
- Watahala soils, which are very deep to bedrock and have more chert fragments in the soil than the Carbo soil; on similar landforms

Similar components:
- Beech Grove soils, which are very shallow to limestone bedrock; on landforms similar to those of the Carbo soil
- Soils that are deep to hard bedrock; on landforms similar to those of the Carbo soil
- Soils that are shallow to hard bedrock; on landforms similar to those of the Carbo soil
- Soils that are on slopes of more than 55 percent; on landforms similar to those of the Carbo soil

Properties and Qualities of the Carbo Soil

Available water capacity: Low (about 3.0 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr or 0.4 µm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: Very high
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Carbo—7s; Rock outcrop—8s
Virginia soil management group: Carbo—Y; Rock outcrop—none assigned
Hydric soil: No

12D—Carbo-Rock outcrop complex, karst, 8 to 35 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and valleys; in areas with karst topography
Position on the landform: Summits, shoulders, and backslopes

Elevation: 1,900 to 3,250 feet
Size of areas: 10 to 100 acres
Note: Many sinkholes are scattered throughout areas of this map unit; erosion has removed part of the original surface layer and has exposed the subsoil in places; some areas may have intricate patterns of erosion, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Note: This Carbo soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Carbo and similar soils: Typically 60 percent, ranging from about 55 to 65 percent
Rock outcrop: Typically 25 percent, ranging from about 15 to 35 percent

Typical Profile

Carbo

Surface layer:
0 to 5 inches—brown silty clay loam

Subsoil:
5 to 24 inches—brown clay; manganese masses

Hard bedrock:
24 inches—limestone bedrock

Rock outcrop

This part of the map unit consists of outcrops of grayish hard limestone bedrock that are a few inches to about 5 feet high.

Minor Components

Dissimilar components:
- Frederick soils, which are very deep to bedrock; on landforms similar to those of the Carbo soil
- Watahala soils, which are very deep to bedrock and have more chert fragments in the soil than the Carbo soil; on similar landforms

Similar components:
- Beech Grove soils, which are very shallow to limestone bedrock; on landforms similar to those of the Carbo soil
- Soils that are deep to hard bedrock; on landforms similar to those of the Carbo soil
- Soils that are shallow to hard bedrock; on landforms similar to those of the Carbo soil
- Soils that are on slopes of more than 35 percent; on landforms similar to those of the Carbo soil

Properties and Qualities of the Carbo Soil

Available water capacity: Low (about 3.0 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr or 0.4 µm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High

Runoff class: Very high
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

General concerns and considerations

The risk of ground-water pollution is higher in karst areas. Sinks vary in their ability to filter pollutants. Some sinkholes may be direct pathways from the land surface to ground water. In most cases, karstic aquifers cannot filter contaminated ground water sufficiently to render the water potable at a discharge site. Any soil amendments applied to the soil surface may wash into the ground water during periods of precipitation. In many cases, chemicals such as fertilizers, herbicides, and pesticides may be transmitted directly to domestic wells in a matter of hours. Concentrations of livestock in or near sinkholes may also contribute to the pollution of ground water. The presence of sinkholes indicates that additional sinkholes may develop in the future.

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak
- Bedrock may interfere with the construction of haul roads and log landings.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to the drier periods.

Building sites

- Because of the potential for sinkhole collapse, building site development in karst areas is not recommended.

Septic tank absorption fields

- Sinkholes (karst areas) increase the potential for ground-water contamination from the effluent from conventional septic systems; septic systems should not be located near sinkholes.
- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Collapsing sinkholes may damage local roads and streets.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Carbo—7s; Rock outcrop—8s
Virginia soil management group: Carbo—Y; Rock outcrop—none assigned
Hydric soil: No

13F—Culleoka-Berks complex, 35 to 70 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Shoulders and backslopes
Elevation: 2,600 to 3,850 feet
Size of areas: 100 to 1,000 acres

Map Unit Composition

Note: These Culleoka and Berks soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Culleoka and similar soils: Typically 55 percent, ranging from about 50 to 55 percent
Berks and similar soils: Typically 35 percent, ranging from about 30 to 45 percent

Typical Profile

Culleoka

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown gravelly silt loam

Subsoil:
3 to 11 inches—yellowish brown silt loam
11 to 22 inches—yellowish brown channery silty clay loam

Substratum:
22 to 27 inches—dark yellowish brown very channery silt loam

Hard bedrock:
27 inches—siltstone bedrock

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 5 inches—brown very channery silt loam

Subsoil:
5 to 15 inches—yellowish brown channery silt loam
15 to 26 inches—brownish yellow very channery silt loam

Substratum:
26 to 28 inches—strong brown extremely channery silt loam

Soft bedrock:
28 inches—shale bedrock

Minor Components

Dissimilar components:
- Oriskany soils, which are very deep to bedrock and have more rock fragments in the soil than the Culleoka soil; on footslopes at the base of hills and mountains

Similar components:
- Bland soils, which have more clay than the Culleoka and Berks soils and have fewer rock fragments in the soil than the Berks soil; on similar landforms
- Calvin soils, which have more rock fragments in the soil than the Culleoka soil and are redder than the Culleoka and Berks soils; on similar landforms
- Rough soils, which are very shallow to shale bedrock and have more rock fragments in the soil than the Culleoka soil; on similar landforms
- Weikert soils, which are shallow to shale bedrock and have more rock fragments in the soil than the Culleoka soil; on similar landforms
- Westmoreland soils, which are deep to shale bedrock and have fewer rock fragments in the soil than the Berks soil; on similar landforms
- Soils that are on slopes of more than 70 percent; on landforms similar to those of the Culleoka and Berks soils
- Soils that are very bouldery or very stony; on landforms similar to those of the Culleoka and Berks soils

Soil Properties and Qualities

Available water capacity: Culleoka—low (about 3.6 inches); Berks—low (about 3.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Culleoka—fine-loamy residuum weathered from shale, siltstone, and limestone; Berks—channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Well suited to chestnut oak; moderately suited to northern red oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Culleoka—U; Berks—JJ
Hydric soils: No

14D—Dekalb channery sandy loam, 8 to 35 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits and shoulders
Elevation: 2,600 to 4,000 feet
Size of areas: 15 to 50 acres

Map Unit Composition

Dekalb and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 5 inches—dark brown channery sandy loam

Subsoil:
5 to 24 inches—yellowish brown very channery sandy loam

Substratum:
24 to 31 inches—yellowish brown extremely channery sandy loam

Hard bedrock:
31 inches—sandstone bedrock

Minor Components

Dissimilar components:
- Bailegap soils, which are deep to sandstone bedrock and have fewer rock fragments in the soil than the Dekalb soil; on similar landforms
- Gilpin soils, which are moderately deep to shale bedrock and have less sand and fewer rock fragments in the soil than the Dekalb soil; on similar landforms
- Lily soils, which have more clay and fewer rock fragments in the soil than the Dekalb soil; on similar landforms
- Oriskany soils, which are very deep to bedrock; on footslopes at the base of hills and mountains
- Rock outcrops on landforms similar to those of the Dekalb soil

Similar components:
- Soils that are shallow to hard bedrock; on landforms similar to those of the Dekalb soil
- Soils that have fewer rock fragments in the subsoil than the Dekalb soil; on similar landforms
- Soils that have fewer or more surface stones than the Dekalb; on similar landforms
- Soils that are redder in the subsoil than the Dekalb soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Very low (about 2.1 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr or 14.1 μm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 3.0 to 15.0 percent subangular stones
Parent material: Gravelly, loamy residuum weathered from sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak; poorly suited to northern red oak

- Bedrock may interfere with the construction of haul roads and log landings.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.
- Because of the amount of rock fragments on the surface, the traction of wheeled harvest equipment may be reduced.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the coarseness of the soil material, the traction of wheeled harvest equipment and log trucks may be reduced.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: FF
Hydric soil: No

14E—Dekalb channery sandy loam, 35 to 55 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Shoulders and backslopes
Elevation: 2,600 to 4,000 feet
Size of areas: 50 to 750 acres

Map Unit Composition

Dekalb and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 5 inches—dark brown channery sandy loam

Subsoil:
5 to 24 inches—yellowish brown very channery sandy loam

Substratum:
24 to 31 inches—yellowish brown extremely channery sandy loam

Hard bedrock:
31 inches—sandstone bedrock

Minor Components

Dissimilar components:
- Bailegap soils, which are deep to sandstone bedrock and have fewer rock fragments in the soil than the Dekalb soil; on similar landforms
- Gilpin soils, which are moderately deep to shale bedrock and have less sand and fewer rock fragments in the soil than the Dekalb soil; on similar landforms
- Lily soils, which have more clay and fewer rock fragments in the soil than the Dekalb soil; on similar landforms
- Oriskany soils, which are very deep to bedrock; on footslopes at the base of hills and mountains
- Rock outcrops on landforms similar to those of the Dekalb soil

Similar components:
- Soils that are shallow to hard bedrock; on landforms similar to those of the Dekalb soil
- Soils that have fewer rock fragments in the subsoil than the Dekalb soil; on similar landforms
- Soils that have fewer or more surface stones than the Dekalb; on similar landforms
- Soils that are redder in the subsoil than the Dekalb soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Very low (about 2.1 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr or 14.1 μm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 3.0 to 15.0 percent subangular stones
Parent material: Gravelly, loamy residuum weathered from sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak; poorly suited to northern red oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.
- Because of the amount of rock fragments on the surface, the traction of wheeled harvest equipment may be reduced.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the coarseness of the soil material, the traction of wheeled harvest equipment and log trucks may be reduced.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: FF
Hydric soil: No

15D—Dekalb-Rock outcrop complex, 8 to 35 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains; rock outcrops can be near-vertical cliffs (fig. 6)
Position on the landform: Summits, shoulders, and backslopes
Elevation: 2,600 to 4,000 feet
Size of areas: 25 to 750 acres

Figure 6.—An area of Dekalb-Rock outcrop complex, 8 to 35 percent slopes, extremely stony.

Map Unit Composition

Note: This Dekalb soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Dekalb and similar soils: Typically 75 percent, ranging from about 70 to 80 percent
Rock outcrop: Typically 15 percent, ranging from about 10 to 20 percent

Typical Profile

Dekalb

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 5 inches—dark brown channery sandy loam

Subsoil:
5 to 24 inches—yellowish brown very channery sandy loam

Substratum:
24 to 31 inches—yellowish brown extremely channery sandy loam

Hard bedrock:
31 inches—sandstone bedrock

Rock outcrop

This part of the map unit consists of outcrops of sandstone bedrock that range from a few inches high to 50 feet high as near-vertical cliffs.

Minor Components

Dissimilar components:
- Bailegap soils, which are deep to sandstone bedrock and have fewer rock fragments in the soil than the Dekalb soil; on similar landforms
- Lily soils, which have more clay and fewer rock fragments in the soil than the Dekalb soil; on similar landforms
- Oriskany soils, which are very deep to bedrock; on footslopes at the base of hills and mountains

Similar components:
- Soils that are shallow to hard bedrock; on landforms similar to those of the Dekalb soil
- Soils that have fewer rock fragments in the subsoil than the Dekalb soil; on similar landforms
- Soils that have fewer or more surface stones than the Dekalb soil; on similar landforms
- Soils that are redder in the subsoil than the Dekalb soil; on similar landforms

Properties and Qualities of the Dekalb Soil

Available water capacity: Very low (about 2.1 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr or 14.1 µm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 3.0 to 15.0 percent subangular stones
Parent material: Gravelly, loamy residuum weathered from sandstone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak; poorly suited to northern red oak
- Bedrock may interfere with the construction of haul roads and log landings.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.

- Because of the amount of rock fragments on the surface, the traction of wheeled harvest equipment may be reduced.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the coarseness of the soil material, the traction of wheeled harvest equipment and log trucks may be reduced.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Dekalb—7s; Rock outcrop—8s
Virginia soil management group: Dekalb—FF; Rock outcrop—none assigned
Hydric soil: No

15F—Dekalb-Rock outcrop complex, 35 to 80 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains; rock outcrops can be near-vertical cliffs
Position on the landform: Shoulders and backslopes
Elevation: 2,600 to 4,000 feet
Size of areas: 25 to 750 acres

Map Unit Composition

Note: This Dekalb soil and areas of Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Dekalb and similar soils: Typically 75 percent, ranging from about 70 to 80 percent
Rock outcrop: Typically 15 percent, ranging from about 10 to 20 percent

Typical Profile

Dekalb

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 5 inches—dark brown channery sandy loam

Subsoil:
5 to 24 inches—yellowish brown very channery sandy loam

Substratum:
24 to 31 inches—yellowish brown extremely channery sandy loam

Hard bedrock:
31 inches—sandstone bedrock

Rock outcrop

This part of the map unit consists of outcrops of sandstone bedrock that range from a few inches high to 50 feet high as near-vertical cliffs.

Minor Components

Dissimilar components:
- Bailegap soils, which are deep to sandstone bedrock and have fewer rock fragments in the soil than the Dekalb soil; on similar landforms
- Lily soils, which have more clay and fewer rock fragments in the soil than the Dekalb soil; on similar landforms
- Oriskany soils, which are very deep to bedrock; on footslopes at the base of hills and mountains

Similar components:
- Calvin soils, which are moderately deep to siltstone bedrock, are redder than the Dekalb soil, and have less sand; on similar landforms
- Soils that are shallow to hard bedrock; on landforms similar to those of the Dekalb soil
- Soils that have fewer rock fragments in the subsoil than the Dekalb soil; on similar landforms
- Soils that have fewer or more surface stones than the Dekalb soil; on similar landforms
- Soils that are redder in the subsoil than the Dekalb soil; on similar landforms

Properties and Qualities of the Dekalb Soil

Available water capacity: Very low (about 2.1 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr or 14.1 µm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 3.0 to 15.0 percent subangular stones
Parent material: Gravelly, loamy residuum weathered from sandstone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak; poorly suited to northern red oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.
- Because of the amount of rock fragments on the surface, the traction of wheeled harvest equipment may be reduced.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the coarseness of the soil material, the traction of wheeled harvest equipment and log trucks may be reduced.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Dekalb—7s; Rock outcrop—8s
Virginia soil management group: Dekalb—FF; Rock outcrop—none assigned
Hydric soil: No

Figure 7.—Hay windrows in an area of Frederick silt loam, 8 to 15 percent slopes.

16C—Frederick silt loam, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills (fig. 7)
Position on the landform: Summits and shoulders
Elevation: 1,900 to 3,000 feet
Size of areas: 5 to 80 acres

Map Unit Composition

Frederick and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 18 inches—red silty clay
18 to 35 inches—red clay; strong brown mottles
35 to 51 inches—red clay; reddish yellow and strong brown mottles
51 to 72 inches—red clay; light red mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Frederick soil
- Slabtown soils, which are moderately well drained; on concave footslopes at the base of hills

- Areas of widely scattered rock outcrops; on landforms similar to those of the Frederick soil

Similar components:
- Watahala soils, which have more chert gravel in the surface layer and subsoil than the Frederick soil; on similar landforms
- Soils that are on slopes of less than 8 percent; on landforms similar to those of the Frederick soil
- Soils that have cobbly surface layers; on landforms similar to those of the Frederick soil
- Soils that have surface layers of fine sandy loam; on landforms similar to those of the Frederick soil
- Soils that have more chert gravel in the surface layer than the Frederick soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 7.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Well suited to grass-legume hay; moderately suited to corn and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- Because of the slope, conditions for operating machinery are unsafe, the operating efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: M
Hydric soil: No

16D—Frederick silt loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Summits, shoulders, and backslopes
Elevation: 1,900 to 3,000 feet
Size of areas: 5 to 200 acres

Map Unit Composition

Frederick and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 18 inches—red silty clay
18 to 35 inches—red clay; strong brown mottles
35 to 51 inches—red clay; reddish yellow and strong brown mottles
51 to 72 inches—red clay; light red mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Frederick soil
- Slabtown soils, which are moderately well drained; on concave footslopes at the base of hills
- Areas of widely scattered rock outcrops; on landforms similar to those of the Frederick soil

Similar components:
- Watahala soils, which have more chert gravel in the surface layer and subsoil than the Frederick soil; on similar landforms
- Soils that have cobbly surface layers; on landforms similar to those of the Frederick soil
- Soils that have surface layers of fine sandy loam; on landforms similar to those of the Frederick soil
- Soils that have more chert gravel in the surface layer than the Frederick soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 7.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: M
Hydric soil: No

17C—Frederick gravelly silt loam, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Summits and shoulders
Elevation: 1,900 to 3,000 feet
Size of areas: 5 to 80 acres

Map Unit Composition

Frederick and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 5 inches—dark yellowish brown gravelly silt loam

Subsurface layer:
5 to 13 inches—light yellowish brown silt loam

Subsoil:
13 to 27 inches—yellowish red silty clay
27 to 62 inches—yellowish red clay; brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Frederick soil
- Slabtown soils, which are moderately well drained; on concave footslopes at the base of hills
- Areas of widely scattered rock outcrops; on landforms similar to those of the Frederick soil

Similar components:
- Watahala soils, which have more chert gravel in the subsoil than the Frederick soil; on similar landforms
- Soils that are on slopes of less than 8 percent; on landforms similar to those of the Frederick soil
- Soils that have cobbly surface layers; on landforms similar to those of the Frederick soil
- Soils that have surface layers of fine sandy loam; on landforms similar to those of the Frederick soil
- Soils that have less chert gravel in the surface layer than the Frederick soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 7.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: About 0.5 to 2.0 percent coarse angular gravel
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- Because of the slope, conditions for operating machinery are unsafe, the operating efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: M
Hydric soil: No

17D—Frederick gravelly silt loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Summits, shoulders, and backslopes
Elevation: 1,900 to 3,000 feet
Size of areas: 5 to 200 acres

Map Unit Composition

Frederick and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 5 inches—dark yellowish brown gravelly silt loam

Subsurface layer:
5 to 13 inches—light yellowish brown silt loam

Subsoil:
13 to 27 inches—yellowish red silty clay
27 to 62 inches—yellowish red clay; brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Frederick soil
- Slabtown soils, which are moderately well drained; on concave footslopes at the base of hills
- Areas of widely scattered rock outcrops; on landforms similar to those of the Frederick soil

Similar components:
- Watahala soils, which have more chert gravel in the subsoil than the Frederick soil; on similar landforms
- Soils that have cobbly surface layers; on landforms similar to those of the Frederick soil

- Soils that have surface layers of fine sandy loam; on landforms similar to those of the Frederick soil
- Soils that have less chert gravel in the surface layer than the Frederick soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 7.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 0.5 to 2.0 percent coarse angular gravel
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: M
Hydric soil: No

17E—Frederick gravelly silt loam, 25 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Elevation: 1,900 to 3,000 feet
Size of areas: 5 to 200 acres

Map Unit Composition

Frederick and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 5 inches—dark yellowish brown gravelly silt loam

Subsurface layer:
5 to 13 inches—light yellowish brown silt loam

Subsoil:
13 to 27 inches—yellowish red silty clay
27 to 62 inches—yellowish red clay; brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Frederick soil
- Slabtown soils, which are moderately well drained; on concave footslopes at the base of hills
- Areas of widely scattered rock outcrops; on landforms similar to those of the Frederick soil

Similar components:
- Watahala soils, which have more chert gravel in the subsoil than the Frederick soil; on similar landforms
- Soils that have cobbly surface layers; on landforms similar to those of the Frederick soil
- Soils that have surface layers of fine sandy loam; on landforms similar to those of the Frederick soil
- Soils that have less chert gravel in the surface layers than the Frederick soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 7.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 0.5 to 2.0 percent coarse angular gravel
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland

Figure 8.—Sinkholes in a hayfield in an area of Frederick and Watahala soils, karst, 8 to 15 percent slopes.

Land capability class: 6e
Virginia soil management group: M
Hydric soil: No

18C—Frederick and Watahala soils, karst, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and valleys; in areas with karst topography (fig. 8)
Position on the landform: Summits and shoulders
Elevation: 2,100 to 2,950 feet
Size of areas: 5 to 100 acres

Map Unit Composition

Note: These Frederick and Watahala soils are included in the same map unit because their use and management are the same or very similar for common uses. The use of these soils is governed by sinkhole (karst) conditions in the areas in which they occur.

Frederick and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Watahala and similar soils: Typically 35 percent, ranging from about 30 to 40 percent

Typical Profile

Frederick

Surface layer:
0 to 5 inches—dark yellowish brown gravelly silt loam

Subsurface layer:
5 to 13 inches—light yellowish brown silt loam

Subsoil:
13 to 27 inches—yellowish red silty clay
27 to 62 inches—yellowish red clay; brownish yellow mottles

Watahala

Surface layer:
0 to 2 inches—dark yellowish brown gravelly silt loam

Subsurface layer:
2 to 17 inches—light yellowish brown gravelly silt loam

Subsoil:
17 to 25 inches—light yellowish brown gravelly loam
25 to 29 inches—strong brown gravelly clay loam; yellowish red mottles
29 to 62 inches—yellowish red clay; brownish yellow mottles

Minor Components

Dissimilar components:
- Beech Grove soils, which are very shallow to bedrock; on landforms similar to those of the Frederick and Watahala soils
- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Frederick and Watahala soils
- Slabtown soils, which are moderately well drained; on concave footslopes at the base of hills
- Areas of widely scattered rock outcrops; on landforms similar to those of the Frederick and Watahala soils

Similar components:
- Soils that are on slopes of less than 8 percent; on landforms similar to those of the Frederick and Watahala soils
- Soils that have cobbly surface layers; on landforms similar to those of the Frederick and Watahala soils
- Soils that have surface layers of fine sandy loam; on landforms similar to those of the Frederick and Watahala soils
- Soils that have less chert gravel in the surface layer than the Frederick and Watahala soils; on similar landforms

Soil Properties and Qualities

Available water capacity: Frederick—moderate (about 7.8 inches); Watahala—low (about 3.7 inches)
Slowest saturated hydraulic conductivity: Frederick—moderately high (about 0.6 in/hr or 4.2 µm/sec); Watahala—moderately high (about 0.2 in/hr or 1.4 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: Frederick—more than 60 inches; Watahala—20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: Frederick—about 0.5 to 2.0 percent coarse angular gravel;

Watahala—about 0 to 1.0 percent angular cobbles and about 0.5 to 2.0 percent coarse angular gravel

Parent material: Frederick—clayey residuum weathered from limestone; Watahala—gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

General concerns and considerations

Many sinkholes are scattered throughout areas of this map unit. The risk of ground-water pollution is higher in karst areas. Sinks vary in their ability to filter pollutants. Some sinkholes may be direct pathways from the land surface to ground water. In most cases, karstic aquifers cannot filter contaminated ground water sufficiently to render it potable at a discharge site. Any soil amendments applied to the soil surface may wash into the ground water during periods of precipitation. In many cases, chemicals such as fertilizers, herbicides, and pesticides may be transmitted directly to domestic wells in a matter of hours. Concentrations of livestock in or near sinkholes may also contribute to the pollution of ground water. The presence of sinkholes indicates that additional sinkholes may develop in the future.

Cropland

Suitability: Moderately suited to grass-legume hay and alfalfa hay; not suited to corn
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- Karst (sinkhole) areas increase the potential for ground-water contamination.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Karst (sinkhole) areas increase the potential for ground-water contamination.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- Because of the slope, conditions for operating machinery are unsafe, the operating efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Because of the potential for sinkhole collapse, building site development in karst areas is not recommended.

Septic tank absorption fields

- Sinkholes (karst areas) increase the potential for ground-water contamination from the effluent from conventional septic systems; septic systems should not be located near sinkholes.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Collapsing sinkholes may damage local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: M
Hydric soils: No

18D—Frederick and Watahala soils, karst, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and valleys; in areas with karst topography
Position on the landform: Summits, shoulders, and backslopes
Elevation: 2,100 to 2,950 feet
Size of areas: 5 to 300 acres

Map Unit Composition

Note: These Frederick and Watahala soils are included in the same map unit because their use and management are the same or very similar for common uses. The use of these soils is governed by sinkhole (karst) conditions in the areas in which they occur.

Frederick and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Watahala and similar soils: Typically 35 percent, ranging from about 30 to 40 percent

Typical Profile

Frederick

Surface layer:
0 to 5 inches—dark yellowish brown gravelly silt loam

Subsurface layer:
5 to 13 inches—light yellowish brown silt loam

Subsoil:
13 to 27 inches—yellowish red silty clay
27 to 62 inches—yellowish red clay; brownish yellow mottles

Watahala

Surface layer:
0 to 2 inches—dark yellowish brown gravelly silt loam

Subsurface layer:
2 to 17 inches—light yellowish brown gravelly silt loam

Subsoil:
17 to 25 inches—light yellowish brown gravelly loam

25 to 29 inches—strong brown gravelly clay loam; yellowish red mottles
29 to 62 inches—yellowish red clay; brownish yellow mottles

Minor Components

Dissimilar components:
- Beech Grove soils, which are very shallow to bedrock; on landforms similar to those of the Frederick and Watahala soils
- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Frederick and Watahala soils
- Slabtown soils, which are moderately well drained; on concave footslopes at the base of hills
- Areas of widely scattered rock outcrops; on landforms similar to those of the Frederick and Watahala soils

Similar components:
- Soils that are on slopes of less than 15 percent; on landforms similar to those of the Frederick and Watahala soils
- Soils that have cobbly surface layers; on landforms similar to those of the Frederick and Watahala soils
- Soils that have surface layers of fine sandy loam; on landforms similar to those of the Frederick and Watahala soils
- Soils that have less chert gravel in the surface layer than the Frederick and Watahala soils; on similar landforms

Soil Properties and Qualities

Available water capacity: Frederick—moderate (about 7.8 inches); Watahala—low (about 3.7 inches)
Slowest saturated hydraulic conductivity: Frederick—moderately high (about 0.6 in/hr or 4.2 μm/sec); Watahala—moderately high (about 0.2 in/hr or 1.4 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: Frederick—more than 60 inches; Watahala—20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: Frederick—about 0.5 to 2.0 percent coarse angular gravel; Watahala—about 0 to 1.0 percent angular cobbles and about 0.5 to 2.0 percent coarse angular gravel
Parent material: Frederick—clayey residuum weathered from limestone; Watahala—gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

General concerns and considerations

Many sinkholes are scattered throughout areas of this map unit. The risk of ground-water pollution is higher in karst areas. Sinks vary in their ability to filter pollutants. Some sinkholes may be direct pathways from the land surface to ground water. In most cases, karstic aquifers cannot filter contaminated ground water sufficiently to render it potable at a discharge site. Any soil amendments applied to the soil surface may wash into the ground water during periods of precipitation. In many cases, chemicals such as fertilizers, herbicides, and pesticides may be transmitted directly to domestic wells in a matter of hours. Concentrations of livestock in or near sinkholes,

may also contribute to the pollution of ground water. The presence of sinkholes indicates that additional sinkholes may develop in the future.

Cropland

Suitability: Moderately suited to grass-legume hay and alfalfa hay; not suited to corn
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- Karst (sinkhole) areas increase the potential for ground-water contamination.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Karst (sinkhole) areas increase the potential for ground-water contamination.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Conditions for log trucks may be unsafe because of the low soil strength.

Building sites

- Because of the potential for sinkhole collapse, building site development in karst areas is not recommended.

Septic tank absorption fields

- Sinkholes (karst areas) increase the potential for ground-water contamination from the effluent from conventional septic systems; septic systems should not be located near sinkholes.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Collapsing sinkholes may damage local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: M
Hydric soils: No

19C—Gilpin silt loam, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits and shoulders
Elevation: 2,600 to 3,850 feet
Size of areas: 5 to 60 acres

Map Unit Composition

Gilpin and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 5 inches—dark yellowish brown silt loam

Subsoil:
5 to 9 inches—yellowish brown silt loam
9 to 21 inches—brownish yellow silty clay loam
21 to 26 inches—brownish yellow channery silty clay loam

Substratum:
26 to 33 inches—yellowish brown very channery silt loam; brownish yellow mottles

Soft bedrock:
33 inches—shale and siltstone bedrock

Minor Components

Dissimilar components:
- Berks soils, which have more rock fragments in the soil than the Gilpin soil; on similar landforms
- Weikert soils, which are shallow to shale bedrock and have more rock fragments in the soil than the Gilpin soil; on similar landforms

Similar components:
- Shelocta soils, which are very deep to bedrock; on footslopes at the base of hills
- Soils that are on slopes of less than 8 percent; on landforms similar to those of the Gilpin soil
- Soils that are deep to soft bedrock; on landforms similar to those of the Gilpin soil
- Soils that are moderately well drained; on landforms similar to those of the Gilpin soil
- Soils that have less clay in the subsoil than the Gilpin soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Low (about 4.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet

Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Fine-loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak
- Bedrock may interfere with the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe, the efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.
- Conditions for log trucks may be unsafe because of the low soil strength.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: U
Hydric soil: No

19D—Gilpin silt loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Shoulders and backslopes
Elevation: 2,600 to 3,850 feet
Size of areas: 5 to 60 acres

Map Unit Composition

Gilpin and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 5 inches—dark yellowish brown silt loam

Subsoil:
5 to 9 inches—yellowish brown silt loam
9 to 21 inches—brownish yellow silty clay loam
21 to 26 inches—brownish yellow channery silty clay loam

Substratum:
26 to 33 inches—yellowish brown very channery silt loam; brownish yellow mottles

Soft bedrock:
33 inches—shale and siltstone bedrock

Minor Components

Dissimilar components:
- Berks soils, which have more rock fragments in the soil than the Gilpin soil; on similar landforms
- Weikert soils, which are shallow to shale bedrock and have more rock fragments in the soil than the Gilpin soil; on similar landforms

Similar components:
- Shelocta soils, which are very deep to bedrock; on footslopes at the base of hills
- Soils that are on slopes of more than 25 percent; on landforms similar to those of the Gilpin soil
- Soils that are deep to soft bedrock; on landforms similar to those of the Gilpin soil
- Soils that are moderately well drained; on landforms similar to those of the Gilpin soil
- Soils that have less clay in the subsoil than the Gilpin soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Low (about 4.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None

Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Fine-loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Conditions for log trucks may be unsafe because of the low soil strength.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: U
Hydric soil: No

20C—Jefferson cobbly loam, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes
Elevation: 2,000 to 3,850 feet
Size of areas: 5 to 35 acres

Map Unit Composition

Jefferson and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Organic layer:
0 to 2 inches—slightly decomposed plant material

Surface layer:
2 to 5 inches—dark brown cobbly loam

Subsurface layer:
5 to 12 inches—yellowish brown loam

Subsoil:
12 to 32 inches—yellowish brown loam
32 to 61 inches—strong brown cobbly clay loam

Substratum:
61 to 70 inches—strong brown cobbly loam; red mottles

Minor Components

Dissimilar components:
- Nicelytown soils, which are moderately well drained; on landforms similar to those of the Jefferson soil

Similar components:
- Oriskany soils, which have more rock fragments in the soil than the Jefferson soil; on similar landforms
- Shelocta soils, which have less sand and more silt than the Jefferson soil; on similar landforms
- Tumbling soils, which have more clay than the Jefferson soil; on similar landforms
- Soils that are on slopes of less than 8 percent; on landforms similar to those of the Jefferson soil
- Soils that are very stony; on landforms similar to those of the Jefferson soil
- Soils that have a dense and hard layer in the subsoil; on landforms similar to those of the Jefferson soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.1 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr or 14.1 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None

Shrink-swell potential: Low
Runoff class: Low
Surface fragments: None
Parent material: Fine-loamy colluvium derived from sandstone, siltstone, and shale

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to eastern white pine; moderately suited to northern red oak
- Because of the slope, conditions for operating machinery are unsafe, the operating efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: L
Hydric soil: No

20D—Jefferson cobbly loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes
Elevation: 2,000 to 3,850 feet
Size of areas: 5 to 75 acres

Map Unit Composition

Jefferson and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Organic layer:
0 to 2 inches—slightly decomposed plant material

Surface layer:
2 to 5 inches—dark brown cobbly loam

Subsurface layer:
5 to 12 inches—yellowish brown loam

Subsoil:
12 to 32 inches—yellowish brown loam
32 to 61 inches—strong brown cobbly clay loam

Substratum:
61 to 70 inches—strong brown cobbly loam; red mottles

Minor Components

Dissimilar components:
- Nicelytown soils, which are moderately well drained; on landforms similar to those of the Jefferson soil

Similar components:
- Oriskany soils, which have more rock fragments in the soil than the Jefferson soil; on similar landforms
- Shelocta soils, which have less sand and more silt than the Jefferson soil; on similar landforms
- Tumbling soils, which have more clay than the Jefferson soil; on similar landforms
- Soils that are on slopes of more than 25 percent; on landforms similar to those of the Jefferson soil
- Soils that are very stony; on landforms similar to those of the Jefferson soil
- Soils that have a dense, hard layer in the subsoil; on landforms similar to those of the Jefferson soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.1 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr or 14.1 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Fine-loamy colluvium derived from sandstone, siltstone, and shale

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to eastern white pine; moderately suited to northern red oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: L
Hydric soil: No

21C—Lily sandy loam, 8 to 15 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits and shoulders
Elevation: 2,600 to 4,000 feet
Size of areas: 5 to 60 acres

Map Unit Composition

Lily and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 7 inches—brown sandy loam

Subsoil:
7 to 13 inches—yellowish brown sandy loam
13 to 24 inches—yellowish brown clay loam

Substratum:
24 to 30 inches—yellowish brown sandy loam

Hard bedrock:
30 inches—sandstone bedrock

Minor Components

Dissimilar components:
- Dekalb soils, which have more rock fragments in the soil than the Lily soil; on similar landforms
- Oriskany soils, which are very deep to bedrock and have more rock fragments in the soil than the Lily soil; on footslopes at the base of hills and mountains

Similar components:
- Bailegap soils, which are deep to sandstone bedrock; on landforms similar to those of the Lily soil
- Gilpin soils, which are moderately deep to shale bedrock and have more silt and less sand than the Lily soil; on similar landforms
- Soils that are deep to hard bedrock; on landforms similar to those of the Lily soil
- Soils that are shallow to hard bedrock; on landforms similar to those of the Lily soil
- Soils that have less clay in the subsoil than the Lily soil; on similar landforms
- Soils that have fewer or more surface stones than the Lily soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Low (about 3.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 μm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.1 to 3.0 percent subangular stones
Parent material: Fine-loamy residuum weathered from sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.
- Large stones on the surface may restrict the operation of some farm machinery.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- Bedrock may interfere with the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe, the operating efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may result in structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6s
Virginia soil management group: U
Hydric soil: No

21D—Lily sandy loam, 15 to 35 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits, shoulders, and backslopes
Elevation: 2,600 to 4,000 feet
Size of areas: 5 to 750 acres

Map Unit Composition

Lily and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 7 inches—brown sandy loam

Subsoil:
7 to 13 inches—yellowish brown sandy loam
13 to 24 inches—yellowish brown clay loam

Substratum:
24 to 30 inches—yellowish brown sandy loam

Hard bedrock:
30 inches—sandstone bedrock

Minor Components

Dissimilar components:
- Dekalb soils, which have more rock fragments in the soil than the Lily soil; on similar landforms
- Oriskany soils, which are very deep to bedrock and have more rock fragments in the soil than the Lily soil; on footslopes at the base of hills and mountains

Similar components:
- Bailegap soils, which are deep to sandstone bedrock; on landforms similar to those of the Lily soil
- Gilpin soils, which are moderately deep to shale bedrock and have more silt and less sand than the Lily soil; on similar landforms
- Soils that are deep to hard bedrock; on landforms similar to those of the Lily soil
- Soils that are shallow to hard bedrock; on landforms similar to those of the Lily soil
- Soils that have less clay in the subsoil than the Lily soil; on similar landforms
- Soils that have fewer or more surface stones than the Lily soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Low (about 3.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 μm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 0.1 to 3.0 percent subangular stones
Parent material: Fine-loamy residuum weathered from sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.

- Because of the slope, the use of mechanical planting equipment is impractical.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may result in structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: U
Hydric soil: No

21E—Lily sandy loam, 35 to 55 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Shoulders and backslopes
Elevation: 2,600 to 4,000 feet
Size of areas: 10 to 250 acres

Map Unit Composition

Lily and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 7 inches—brown sandy loam

Subsoil:
7 to 13 inches—yellowish brown sandy loam
13 to 24 inches—yellowish brown clay loam

Substratum:
24 to 30 inches—yellowish brown sandy loam

Hard bedrock:
30 inches—sandstone bedrock

Minor Components

Dissimilar components:
- Dekalb soils, which have more rock fragments in the soil than the Lily soil; on similar landforms
- Oriskany soils, which are very deep to bedrock and have more rock fragments in the soil than the Lily soil; on footslopes at the base of hills and mountains

Similar components:
- Bailegap soils, which are deep to sandstone bedrock; on landforms similar to those of the Lily soil
- Gilpin soils, which are moderately deep to shale bedrock and have more silt and less sand than the Lily soil; on similar landforms
- Soils that are deep to hard bedrock; on landforms similar to those of the Lily soil
- Soils that are shallow to hard bedrock; on landforms similar to those of the Lily soil
- Soils that have less clay in the subsoil than the Lily soil; on similar landforms
- Soils that have fewer or more surface stones than the Lily soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Low (about 3.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 μm/sec)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 0.1 to 3.0 percent subangular stones
Parent material: Fine-loamy residuum weathered from sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may result in structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: U
Hydric soil: No

22A—Maurertown silt loam, 0 to 3 percent slopes, rarely flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Low stream terraces
Position on the landform: Treads and backswamps
Elevation: 1,900 to 2,600 feet
Size of areas: 3 to 70 acres

Map Unit Composition

Maurertown and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 6 inches—dark grayish brown silt loam

Subsoil:
6 to 18 inches—dark grayish brown silty clay loam; yellowish brown masses of oxidized iron
18 to 41 inches—dark gray silty clay; yellowish brown masses of oxidized iron

Substratum:
41 to 48 inches—dark gray silty clay loam; yellowish brown and yellow masses of oxidized iron and light gray iron depletions
48 to 62 inches—gray gravelly silty clay loam; brownish yellow masses of oxidized iron and light gray iron depletions

Minor Components

Dissimilar components:
- Alonzville soils, which are well drained and have less clay than the Maurertown soil; on similar landforms
- Nicelytown soils, which are moderately well drained, are not susceptible to flooding, and have less clay than the Maurertown soil; on the higher stream terraces

Similar components:
- Atkins soils, which are more susceptible to flooding and have less clay than the Maurertown soil; on flood plains
- Soils that are on slopes of more than 3 percent; on landforms similar to those of the Maurertown soil
- Soils that have more rock fragments in the subsoil than the Maurertown soil; on similar landforms
- Soils that have surface layers which are thicker and darker brown than those of the Maurertown soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 8.6 inches)
Slowest saturated hydraulic conductivity: Low (about 0.001 in/hr or 0.007 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Poorly drained
Depth to seasonal water saturation: About 0 to 6 inches
Water table kind: Apparent
Flooding hazard: Rare
Ponding hazard: Occasional
Depth of ponding: 0.3 to 1.0 foot
Shrink-swell potential: Moderate
Runoff class: Negligible
Surface fragments: None
Parent material: Clayey alluvium derived from limestone, sandstone, and shale

Use and Management Considerations

Cropland

Suitability: Poorly suited to corn; not suited to grass-legume hay and alfalfa hay
- The high clay content restricts the rooting depth of crops.
- Frost action may damage the root system of winter grain crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pastureland

Suitability: Well suited
- The seasonal high water table can affect equipment use, grazing patterns, and the viability of grass and legume species.
- Compaction may occur when the soil is wet.
- Frost action may damage the root systems of plants.

Woodland

Suitability: Moderately suited to sweetgum
- Ponding restricts the safe use of roads by log trucks.
- Soil wetness may limit the use of log trucks.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Flooding and ponding are limitations affecting building site development.

- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- Ponding is a limitation affecting septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of the soil.
- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4w
Virginia soil management group: NN
Hydric soil: Yes

23B—Nicelytown silt loam, 3 to 8 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: High stream terraces
Position on the landform: Treads and footslopes
Elevation: 1,900 to 2,900 feet
Size of areas: 5 to 65 acres

Map Unit Composition

Nicelytown and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 6 inches—dark yellowish brown silt loam

Subsoil:
6 to 18 inches—yellowish brown silt loam; light yellowish brown mottles and black manganese masses
18 to 24 inches—yellowish brown silt loam; pale brown mottles, light brownish gray iron depletions, and black manganese masses
24 to 60 inches—yellowish brown silty clay loam; light gray iron depletions, brownish yellow masses of oxidized iron, and black manganese masses
60 to 62 inches—yellowish brown very cobbly silty clay loam; strong brown masses of oxidized iron and light gray iron depletions

Minor Components

Dissimilar components:
- Alonzville soils, which are well drained and susceptible to flooding; on the lower stream terraces

Figure 9.—Alfalfa growing on Nicelytown silt loam, 3 to 8 percent slopes.

- Shelocta soils, which are well drained; on footslopes
- Maurertown soils, which are poorly drained and susceptible to flooding and ponding; in backswamps of the lower stream terraces
- Berks and Gilpin soils, which are moderately deep to shale bedrock; on hills
- Tumbling soils, which are well drained and have more clay than the Nicelytown soil; on footslopes

Similar components:
- Soils that are on slopes of less than 3 percent; on landforms similar to those of the Nicelytown soil
- Soils that are very stony on the surface; on landforms similar to those of the Nicelytown soil
- Soils that have a very cobbly surface layer; on landforms similar to those of the Nicelytown soil
- Soils that have a dense and hard layer in the subsoil; on landforms similar to those of the Nicelytown soil

Soil Properties and Qualities

Available water capacity: High (about 9.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr or 1.4 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Moderately well drained
Depth to seasonal water saturation: About 18 to 30 inches
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Very high

Figure 10.—Hay production in an area of Nicelytown silt loam, 3 to 8 percent slopes. Nicelytown soils are typically associated with Berks and Weikert soils, which are on the adjacent hills.

Surface fragments: None
Parent material: Fine-loamy alluvium derived from limestone, sandstone, and shale

Use and Management Considerations

Cropland

Suitability: Well suited to corn and grass-legume hay; moderately suited to alfalfa hay (fig. 9)
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root system of winter grain crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited (fig. 10)
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root systems of plants.

Woodland

Suitability: Well suited to northern red oak
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: G
Hydric soil: No

23C—Nicelytown silt loam, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: High stream terraces and base of slopes of hills
Position on the landform: Treads, risers, footslopes, and fans
Elevation: 1,900 to 2,900 feet
Size of areas: 5 to 65 acres

Map Unit Composition

Nicelytown and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 6 inches—dark yellowish brown silt loam

Subsoil:
6 to 18 inches—yellowish brown silt loam; light yellowish brown mottles and black manganese masses
18 to 24 inches—yellowish brown silt loam; pale brown mottles, light brownish gray iron depletions, and black manganese masses
24 to 60 inches—yellowish brown silty clay loam; light gray iron depletions, brownish yellow masses of oxidized iron, and black manganese masses
60 to 62 inches—yellowish brown very cobbly silty clay loam; strong brown masses of oxidized iron and light gray iron depletions

Minor Components

Dissimilar components:
- Alonzville soils, which are well drained and susceptible to flooding; on the lower stream terraces
- Shelocta soils, which are well drained; on footslopes

- Maurertown soils, which are poorly drained and susceptible to flooding and ponding; in backswamps of the lower stream terraces
- Berks and Gilpin soils, which are moderately deep to shale bedrock; on hills
- Tumbling soils, which are well drained and have more clay than the Nicelytown soil; on footslopes

Similar components:
- Soils that are on slopes of more than 15 percent; on landforms similar to those of the Nicelytown soil
- Soils that are very stony on the surface; on landforms similar to those of the Nicelytown soil
- Soils that have a very cobbly surface layer; on landforms similar to those of the Nicelytown soil
- Soils that have a dense and hard layer in the subsoil; on landforms similar to those of the Nicelytown soil

Soil Properties and Qualities

Available water capacity: High (about 9.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr or 1.4 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Moderately well drained
Depth to seasonal water saturation: About 18 to 30 inches
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Very high
Surface fragments: None
Parent material: Fine-loamy alluvium/colluvium derived from limestone, sandstone, and shale

Use and Management Considerations

Cropland

Suitability: Well suited to grass-legume hay; moderately suited to corn and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root system of winter grain crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root systems of plants.

Woodland

Suitability: Well suited to northern red oak
- Because of the slope, conditions for operating machinery are unsafe, the operating efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.

- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: G
Hydric soil: No

24B—Ogles very stony loam, 0 to 5 percent slopes, frequently flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains along small creeks and major rivers
Position on the landform: Flood-plain steps
Elevation: 1,900 to 2,600 feet
Size of areas: 5 to 75 acres

Map Unit Composition

Ogles and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—very dark brown very stony loam

Subsoil:
6 to 10 inches—dark yellowish brown very stony loam
10 to 23 inches—yellowish brown extremely stony sandy loam

Substratum:
23 to 65 inches—dark yellowish brown extremely stony loamy sand

Minor Components

Dissimilar components:
- Philo soils, which are moderately well drained and have fewer rock fragments in the soil than the Ogles soil; on similar landforms

Similar components:
- Pope soils, which have fewer rock fragments in the soil than the Ogles soil; on similar landforms
- Soils that are on slopes of more than 5 percent; on landforms similar to those of the Ogles soil
- Soils that are very bouldery on the surface; on landforms similar to those of the Ogles soil

Soil Properties and Qualities

Available water capacity: Moderate (about 6.2 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr or 14.1 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: About 42 to 72 inches
Water table kind: Apparent
Flooding hazard: Frequent
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very low
Surface fragments: None
Parent material: Stony, loamy alluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Flooding may damage pastures.
- Large stones on the surface may restrict the operation of some farm machinery.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- Flooding may damage haul roads and restricts the safe use of roads by log trucks.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Because of the flooding, building site development is limited.
- The seasonal high water table may restrict the period when excavations can be made.

Figure 11.—An area of Ogles-Pope-Philo complex, 0 to 3 percent slopes, occasionally flooded, is in the foreground on the flood plain. An area of Nicelytown silt loam, 8 to 15 percent slopes, is in the background on the high stream terrace.

Septic tank absorption fields

- Because of the flooding, the use of this soil for septic tank absorption fields is limited.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Flooding may damage local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6s
Virginia soil management group: CC
Hydric soil: No

25A—Ogles-Pope-Philo complex, 0 to 3 percent slopes, occasionally flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains along small creeks and major rivers (fig. 11)
Position on the landform: Flood-plain steps

Elevation: 1,900 to 2,600 feet
Size of areas: 5 to 120 acres

Map Unit Composition

Note: These Ogles, Pope, and Philo soils occur together in such an intermingled pattern that it was not practical to separate them at the scale selected for mapping.

Ogles and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Pope and similar soils: Typically 25 percent, ranging from about 15 to 25 percent
Philo and similar soils: Typically 20 percent, ranging from about 15 to 25 percent

Typical Profile

Ogles

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—very dark brown very stony loam

Subsoil:
6 to 10 inches—dark yellowish brown very stony loam
10 to 23 inches—yellowish brown extremely stony sandy loam

Substratum:
23 to 65 inches—dark yellowish brown extremely stony loamy sand

Pope

Surface layer:
0 to 8 inches—dark yellowish brown fine sandy loam

Subsoil:
8 to 15 inches—brown gravelly sandy loam
15 to 27 inches—strong brown sandy loam
27 to 45 inches—strong brown gravelly sandy loam

Substratum:
45 to 65 inches—strong brown very gravelly loamy sand

Philo

Surface layer:
0 to 5 inches—very dark grayish brown fine sandy loam

Subsoil:
5 to 20 inches—dark yellowish brown fine sandy loam; pale brown iron depletions and yellowish brown iron-manganese masses
20 to 44 inches—olive brown fine sandy loam; light brownish gray iron depletions and strong brown masses of oxidized iron

Substratum:
44 to 60 inches—light olive brown very cobbly sandy loam; strong brown masses of oxidized iron and light brownish gray iron depletions

Minor Components

Dissimilar components:
- Atkins soils, which are poorly drained; on landforms similar to those of the major soils and in backswamps

Similar components:
- Soils that have surface layers of silt loam; on landforms similar to those of the major soils
- Soils that have surface layers that are darker brown than those of the Ogles, Pope, and Philo soils; on similar landforms

Soil Properties and Qualities

Available water capacity: Ogles—moderate (about 6.2 inches); Pope—low (about 5.0 inches); Philo—moderate (about 8.6 inches)
Slowest saturated hydraulic conductivity: Ogles and Pope—high (about 2.0 in/hr or 14.1 µm/sec); Philo—moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Ogles and Pope—well drained; Philo—moderately well drained
Depth to seasonal water saturation: Ogles—about 42 to 72 inches; Pope—more than 6 feet; Philo—about 18 to 36 inches
Water table kind: Ogles and Philo—apparent; Pope—none
Flooding hazard: Occasional
Ponding hazard: Ogles and Pope—none; Philo—occasional
Depth of ponding: Ogles and Pope—not applicable; Philo—0.2 to 1.0 foot
Shrink-swell potential: Low
Runoff class: Ogles and Pope—very low; Philo—negligible
Surface fragments: None
Parent material: Ogles—stony, loamy alluvium derived from sandstone and shale; Pope—coarse-loamy alluvium derived from sandstone, siltstone, and shale; Philo—coarse-loamy alluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

Suitability: Moderately suited
- Flooding may damage pastures.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- Flooding may damage haul roads.
- Flooding and ponding restrict the safe use of roads by log trucks.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- The maintenance of haul roads and log landings is increased because of the coarse textured soil layers.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Flooding and ponding are limitations affecting building site development.
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- Flooding and ponding are limitations affecting septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Flooding may damage local roads and streets.
- Ponding affects the ease of excavation and grading and limits the bearing capacity of the soil.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Ogles—6s; Pope—1; Philo—2w
Virginia soil management group: Ogles—CC; Pope—A; Philo—H
Hydric soils: No

26C—Oriskany gravelly fine sandy loam, 8 to 15 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes
Elevation: 1,970 to 3,940 feet
Size of areas: 5 to 35 acres

Map Unit Composition

Oriskany and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 6 inches—dark brown gravelly fine sandy loam

Subsurface layer:
6 to 14 inches—yellowish brown very cobbly fine sandy loam

Subsoil:
14 to 61 inches—strong brown extremely stony sandy clay loam

Minor Components

Dissimilar components:
- Bailegap soils, which are deep to sandstone bedrock and have fewer rock fragments in the soil than the Oriskany soil; on hills and mountains
- Berks soils, which are moderately deep to shale bedrock; on hills and mountains
- Culleoka soils, which are moderately deep to siltstone bedrock and have fewer rock fragments in the soil than the Oriskany soil; on hills and mountains
- Tumbling soils, which have fewer rock fragments and more clay than the Oriskany soil; on similar landforms
- Westmoreland soils, which are deep to shale bedrock and have fewer rock fragments in the soil than the Oriskany soil; on hills and mountains

Similar components:
- Jefferson soils, which have fewer rock fragments in the soil than the Oriskany soil; on similar landforms
- Soils that are on slopes of less than 8 percent; on landforms similar to those of the Oriskany soil
- Soils that are very bouldery or very rubbly on the surface; on landforms similar to those of the Oriskany soil
- Soils that have fewer stones on the surface than the Oriskany soil; on similar landforms
- Soils that have more silt than the Oriskany soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 7.9 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr or 14.1 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Surface fragments: About 1.0 to 4.0 percent subrounded cobbles, about 2.0 to 10.0 percent subrounded stones, and about 0 to 1.0 percent subrounded boulders
Parent material: Stony, loamy colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Well suited to yellow-poplar; moderately suited to northern red oak
- Because of the slope, conditions for operating machinery are unsafe, the operating efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: CC
Hydric soil: No

26D—Oriskany gravelly fine sandy loam, 15 to 35 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes
Elevation: 1,970 to 3,940 feet
Size of areas: 5 to 75 acres

Map Unit Composition

Oriskany and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 6 inches—dark brown gravelly fine sandy loam

Subsurface layer:
6 to 14 inches—yellowish brown very cobbly fine sandy loam

Subsoil:
14 to 61 inches—strong brown extremely stony sandy clay loam

Minor Components

Dissimilar components:
- Bailegap soils, which are deep to sandstone bedrock and have fewer rock fragments in the soil than the Oriskany soil; on hills and mountains
- Berks soils, which are moderately deep to shale bedrock; on hills and mountains
- Culleoka soils, which are moderately deep to siltstone bedrock and have fewer rock fragments in the soil than the Oriskany soil; on hills and mountains
- Tumbling soils, which have fewer rock fragments and more clay in the soil than the Oriskany soil; on similar landforms
- Westmoreland soils, which are deep to shale bedrock and have fewer rock fragments in the soil than the Oriskany soil; on hills and mountains

Similar components:
- Jefferson soils, which have fewer rock fragments in the soil than the Oriskany soil; on similar landforms
- Soils that are on slopes of more than 35 percent; on landforms similar to those of the Oriskany soil
- Soils that are very bouldery or very rubbly on the surface; on landforms similar to those of the Oriskany soil
- Soils that have fewer stones on the surface than the Oriskany soil; on similar landforms
- Soils that have more silt than the Oriskany soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 7.9 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr or 14.1 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: About 2.0 to 10.0 percent subrounded stones, about 1.0 to 4.0 percent subrounded cobbles, and about 0 to 1.0 percent subrounded boulders
Parent material: Stony, loamy colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Well suited to yellow-poplar; moderately suited to northern red oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope and the content of rock fragments, the use of mechanical planting equipment is impractical.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: CC
Hydric soil: No

Figure 12.—An area of Oriskany gravelly fine sandy loam, 15 to 55 percent slopes, very rubbly. Numerous boulders and stones limit this soil for most uses. Most areas of this map unit are in woodland. A few areas, such as the one in the photograph, are in pasture.

27E—Oriskany gravelly fine sandy loam, 15 to 55 percent slopes, very rubbly

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains (fig. 12)
Position on the landform: Footslopes
Elevation: 1,970 to 3,940 feet
Size of areas: 15 to 75 acres

Map Unit Composition

Oriskany and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 6 inches—dark brown gravelly fine sandy loam

Subsurface layer:
6 to 14 inches—yellowish brown very cobbly fine sandy loam

Subsoil:
14 to 61 inches—strong brown extremely stony sandy clay loam

Minor Components

Dissimilar components:
- Bailegap soils, which are deep to sandstone bedrock and have fewer rock fragments in the soil than the Oriskany soil; on hills and mountains
- Berks soils, which are moderately deep to shale bedrock; on hills and mountains
- Culleoka soils, which are moderately deep to siltstone bedrock and have fewer rock fragments in the soil than the Oriskany soil; on hills and mountains
- Tumbling soils, which have fewer rock fragments and more clay in the soil than the Oriskany soil; on similar landforms
- Westmoreland soils, which are deep to shale bedrock and have fewer rock fragments in the soil than the Oriskany soil; on hills and mountains

Similar components:
- Jefferson soils, which have fewer rock fragments in the soil than the Oriskany soil; on similar landforms
- Soils that have fewer stones on the surface than the Oriskany soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 7.9 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr or 14.1 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: About 10.0 to 15.0 percent subrounded stones, about 5.0 to 15.0 percent subrounded cobbles, and about 35.0 to 45.0 percent subrounded boulders
Parent material: Stony, loamy colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Well suited to yellow-poplar; moderately suited to northern red oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the slope and the content of rock fragments, the use of mechanical planting equipment is impractical.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: CC
Hydric soil: No

28A—Philo fine sandy loam, 0 to 3 percent slopes, occasionally flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains along major streams and small creeks
Position on the landform: Flood-plain steps
Elevation: 1,900 to 2,600 feet
Size of areas: 5 to 100 acres

Map Unit Composition

Philo and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 5 inches—very dark grayish brown fine sandy loam

Subsoil:
5 to 20 inches—dark yellowish brown fine sandy loam; pale brown iron depletions and yellowish brown iron-manganese masses
20 to 44 inches—olive brown fine sandy loam; light brownish gray iron depletions and strong brown masses of oxidized iron

Substratum:
44 to 60 inches—light olive brown very cobbly sandy loam; strong brown masses of oxidized iron and light brownish gray iron depletions

Minor Components

Dissimilar components:
- Pope soils, which are well drained; on landforms similar to those of the Philo soil
- Atkins soils, which are poorly drained; on landforms similar to those of the Philo soil or in backswamps
- Maurertown soils, which are poorly drained, are less susceptible to flooding than the Philo soil, and have more clay; in backswamps of stream terraces
- Ogles soils, which are well drained and have more rock fragments in the soil than the Philo soil; on similar landforms

Similar components:
- Soils that have more clay than the Philo soil; on similar landforms
- Soils that have surface layers that are darker brown than those of the Philo soil; on similar landforms
- Soils that have surface layers of silt loam; on landforms similar to those of the Philo soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Moderately well drained
Depth to seasonal water saturation: About 18 to 36 inches
Water table kind: Apparent
Flooding hazard: Occasional
Ponding hazard: Occasional
Depth of ponding: 0.2 to 1.0 foot
Shrink-swell potential: Low
Runoff class: Negligible
Surface fragments: None
Parent material: Coarse-loamy alluvium derived from sandstone, and shale

Use and Management Considerations

Cropland

Suitability: Well suited to corn; moderately suited to grass-legume hay; not suited to alfalfa hay
- Excessive permeability increases the risk of ground-water contamination.
- Flooding may damage crops.

Pastureland

Suitability: Well suited
- Flooding may damage pastures.

Woodland

Suitability: Well suited to northern red oak and yellow-poplar
- Flooding may damage haul roads.
- Flooding and ponding restrict the safe use of roads by log trucks.

Building sites

- Flooding and ponding are limitations affecting building site development.
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- Flooding and ponding are limitations affecting septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Flooding may damage local roads and streets.

- Ponding affects the ease of excavation and grading and limits the bearing capacity of the soil.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2w
Virginia soil management group: H
Hydric soil: No

29A—Pope fine sandy loam, 0 to 3 percent slopes, occasionally flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains along major rivers
Position on the landform: Flood-plain steps
Elevation: 1,900 to 2,600 feet
Size of areas: 3 to 30 acres

Map Unit Composition

Pope and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 8 inches—dark yellowish brown fine sandy loam

Subsoil:
8 to 15 inches—brown gravelly sandy loam
15 to 27 inches—strong brown sandy loam
27 to 45 inches—strong brown gravelly sandy loam

Substratum:
45 to 65 inches—strong brown very gravelly loamy sand

Minor Components

Dissimilar components:
- Atkins soils, which are poorly drained and susceptible to ponding; on landforms similar to those of the Pope soil and in backswamps

Similar components:
- Alonzville soils, which are less susceptible to flooding than the Pope soil and have more clay; on stream terraces
- Ogles soils, which have more rock fragments in the soil than the Pope soil; on similar landforms
- Soils that are on slopes of more than 3 percent; on landforms similar to those of the Pope soil
- Soils that have thick, dark surface layers; on landforms similar to those of the Pope soil
- Soils that have more silt and less sand throughout than the Pope soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Low (about 5.0 inches)

Slowest saturated hydraulic conductivity: High (about 2.0 in/hr or 14.1 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: Occasional
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very low
Surface fragments: None
Parent material: Coarse-loamy alluvium derived from sandstone, siltstone, and shale

Use and Management Considerations

Cropland

Suitability: Well suited to corn, grass-legume hay, and alfalfa hay
- Flooding may damage crops.

Pastureland

Suitability: Well suited
- Flooding may damage pastures.

Woodland

Suitability: Well suited to northern red oak; moderately suited to yellow-poplar
- Flooding may damage haul roads and restricts the safe use of roads by log trucks.
- The maintenance of haul roads and log landings is increased because of the coarse textured soil layers.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.

Building sites

- Because of the flooding, building site development is limited.

Septic tank absorption fields

- Because of the flooding, the use of this soil for septic tank absorption fields is limited.

Local roads and streets

- Flooding may damage local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 1
Virginia soil management group: A
Hydric soil: No

30—Quarries, limestone

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills in areas used as limestone gravel quarries (fig. 13)
Position on the landform: Variable
Size of areas: Less than 40 acres

Figure 13.—The map unit Quarries, limestone, at a major quarry near Rocky Gap, Virginia.

Map Unit Composition

Quarry, limestone: Typically 95 percent, ranging from about 90 to 100 percent

Typical Profile

This map unit occurs as open excavations and rock piles in limestone gravel quarries. A typical profile is not given.

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on hills
- Water, ponds, and reservoirs

Similar components:
- Beech Grove soils, which are very shallow to limestone bedrock; on hills
- Udorthents, fill material, or piles of disturbed soil material
- Rock outcrops

Use and Management Considerations

Onsite investigation is needed to determine the suitability of any area for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland

Land capability class: None assigned
Virginia soil management group: None assigned
Hydric soils: No

31F—Rock outcrop-Beech Grove-Benthole complex, 25 to 100 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and valleys (fig. 14)
Position on the landform: Rock outcrop—near-vertical cliffs; Beech Grove—backslopes and ledges of cliffs along rivers and streams; Benthole—footslopes downslope of cliffs along rivers and streams
Elevation: 1,900 to 2,600 feet
Size of areas: 5 to 25 acres

Map Unit Composition

Note: These Beech Grove and Benthole soils and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Rock outcrop: Typically 50 percent, ranging from about 45 to 55 percent
Beech grove and similar soils: Typically 25 percent, ranging from about 15 to 25 percent
Benthole and similar soils: Typically 20 percent, ranging from about 15 to 20 percent

Figure 14.—Rock outcrop in an area of Rock outcrop-Beech Grove-Benthole complex, 25 to 100 percent slopes. Limestone outcrops typically cover 45 to 55 percent of the surface.

Typical Profile

Rock outcrop

This part of the map unit consists of outcrops of grayish hard limestone bedrock that are near-vertical cliffs.

Beech Grove

Surface layer:
0 to 5 inches—very dark brown silt loam

Hard bedrock:
5 inches—limestone bedrock

Benthole

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—very dark grayish brown gravelly silt loam

Subsoil:
3 to 20 inches—brown very cobbly silty clay loam
20 to 37 inches—yellowish brown very cobbly silty clay loam
37 to 63 inches—dark yellowish brown very cobbly silty clay loam

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on hills

Similar components:
- Soils that are rubbly or very bouldery on the surface; on landforms similar to those of the Beech Grove and Benthole soils
- Soils that have surface layers that are darker brown that those of the Beech Grove and Benthole soils; on similar landforms

Properties and Qualities of the Beech Grove and Benthole Soils

Available water capacity: Beech Grove—very low (about 1.0 inch); Benthole—low (about 5.0 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 μm/sec)
Depth class: Beech Grove—very shallow (less than 10 inches); Benthole—very deep (more than 60 inches)
Depth to root-restrictive feature: Beech Grove—1 to 8 inches to bedrock (lithic); Benthole—more than 60 inches
Drainage class: Beech Grove—excessively drained; Benthole—well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Beech Grove—very high; Benthole—high
Surface fragments: Beech Grove—about 0.05 to 1.0 percent subangular channers and about 0.05 to 1.0 percent subangular flagstones; Benthole—about 4.0 to 10.0 percent subangular boulders and about 1.0 to 2.0 percent subangular stones
Parent material: Beech Grove—loamy residuum weathered from limestone; Benthole—stony, loamy colluvium derived from limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

- Because of the proximity to steep bluffs, this map unit is not recommended for conventional timber management.

Building site development

- Because of the proximity to steep river bluffs, this map unit is not recommended for building sites.

Septic tank absorption fields

- Because of the proximity to steep river bluffs, this map unit is not recommended for septic tank absorption fields.

Local roads and streets

- Because of the proximity to steep river bluffs, this map unit is not recommended for local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Rock outcrop—8s; Beech Grove and Benthole—7s
Virginia soil management group: Rock outcrop—none assigned; Beech Grove—JJ; Benthole—CC
Hydric soils: No

32C—Shelocta silt loam, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes
Elevation: 2,200 to 3,850 feet
Size of areas: 5 to 600 acres

Map Unit Composition

Shelocta and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 8 inches—dark yellowish brown silt loam

Subsoil:
8 to 15 inches—brown silt loam; black iron-manganese concretions
15 to 34 inches—strong brown silt loam; black iron-manganese concretions
34 to 46 inches—strong brown silty clay loam; black iron-manganese concretions

46 to 62 inches—strong brown channery silty clay loam; black iron-manganese concretions

Minor Components

Dissimilar components:
- Berks soils, which are moderately deep to shale bedrock and have more rock fragments in the subsoil than the Shelocta soil; on hills and mountains
- Calvin soils, which are moderately deep to siltstone bedrock, are redder than the Shelocta soil, and have more rock fragments in the soil; on hills and mountains
- Nicelytown soils, which are moderately well drained; on landforms similar to those of the Shelocta soil
- Oriskany soils, which have more rock fragments in the soil than the Shelocta soil; on similar landforms
- Weikert soils, which are shallow to shale bedrock and have more rock fragments in the subsoil than the Shelocta soil; on hills and mountains

Similar components:
- Gilpin soils, which are moderately deep to shale bedrock; on hills and mountains
- Jefferson soils, which have more sand and less silt than the Shelocta soil; on similar landforms
- Soils that are on slopes of less than 8 percent; on landforms simlar to those of the Shelocta soil
- Soils that have more rock fragments in the soil than the Shelocta soil; on similar landforms
- Soils that have a subsoil that is redder than that of the Shelocta soil; on similar landforms

Soil Properties and Qualities

Available water capacity: High (about 10.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Fine-loamy colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

Suitability: Well suited to grass-legume hay; moderately suited to corn and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited

- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak and eastern white pine
- Because of the slope, conditions for operating machinery are unsafe, the operating efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- The low soil strength may result in structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: L
Hydric soil: No

32D—Shelocta silt loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes
Elevation: 2,200 to 3,850 feet
Size of areas: 5 to 200 acres

Map Unit Composition

Shelocta and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 8 inches—dark yellowish brown silt loam

Subsoil:
8 to 15 inches—brown silt loam; black iron-manganese concretions
15 to 34 inches—strong brown silt loam; black iron-manganese concretions
34 to 46 inches—strong brown silty clay loam; black iron-manganese concretions
46 to 62 inches—strong brown channery silty clay loam; black iron-manganese concretions

Minor Components

Dissimilar components:
- Berks soils, which are moderately deep to shale bedrock and have more rock fragments in the subsoil than the Shelocta soil; on hills and mountains
- Calvin soils, which are moderately deep to siltstone bedrock, are redder than the Shelocta soil, and have more rock fragments in the soil; on hills and mountains
- Nicelytown soils, which are moderately well drained; on landforms similar to those of the Shelocta soil
- Oriskany soils, which have more rock fragments in the soil than the Shelocta soil; on similar landforms
- Weikert soils, which are shallow to shale bedrock and have more rock fragments in the subsoil than the Shelocta soil; on hills and mountains

Similar components:
- Gilpin soils, which are moderately deep to shale bedrock; on hills and mountains
- Jefferson soils, which have more sand and less silt than the Shelocta soil; on similar landforms
- Soils that are on slopes of more than 25 percent; on landforms similar to those of the Shelocta soil
- Soils that have more rock fragments in the soil than the Shelocta soil; on similar landforms
- Soils that are redder in the subsoil than the Shelocta soil; on similar landforms

Soil Properties and Qualities

Available water capacity: High (about 10.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Fine-loamy colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak and eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- The low soil strength may result in structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: L
Hydric soil: No

33B—Slabtown silt loam, 3 to 8 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and areas in valleys
Position on the landform: Concave footslopes, toeslopes, and heads of drainageways
Elevation: 2,000 to 2,750 feet
Size of areas: 5 to 50 acres

Map Unit Composition

Slabtown and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 9 inches—brown silt loam

Subsurface layer:
9 to 18 inches—yellowish brown silt loam; pale brown mottles

Subsoil:
18 to 26 inches—yellowish brown silt loam; black iron-manganese masses
26 to 34 inches—yellowish brown silt loam; light gray iron depletions
34 to 44 inches—light yellowish brown and strong brown gravelly silty clay loam; light gray iron depletions

44 to 75 inches—yellowish brown clay; yellowish red mottles and light brownish gray iron depletions

Minor Components

Dissimilar components:
- Philo soils, which are susceptible to flooding; on flood plains
- Maurertown soils, which are susceptible to flooding and ponding and are poorly drained; in backswamps of stream terraces
- Carbo soils, which are moderately deep to limestone bedrock; on adjacent hills
- Frederick and Watahala soils, which are well drained and have more clay in the upper part of the soil than the Slabtown soil; on adjacent hills
- Soils that are well drained; on landforms similar to those of the Slabtown soil

Similar components:
- Soils that are on slopes of less than 3 percent; on landforms similar to those of the Slabtown soil
- Soils that have a dense and hard layer in the subsoil; on landforms similar to those of the Slabtown soil
- Soils that have more gravel in the surface layer than the Slabtown soil; on similar landforms

Soil Properties and Qualities

Available water capacity: High (about 10.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr or 1.4 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Moderately well drained
Depth to seasonal water saturation: About 18 to 36 inches
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: Medium
Surface fragments: None
Parent material: Local fine-loamy colluvium derived from limestone and shale over clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Well suited to corn and grass-legume hay; moderately suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak

- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: G
Hydric soil: No

33C—Slabtown silt loam, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and areas in valleys (fig. 15)
Position on the landform: Concave footslopes, toeslopes, and heads of drainageways
Elevation: 2,000 to 2,750 feet
Size of areas: 5 to 50 acres

Map Unit Composition

Slabtown and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 9 inches—brown silt loam

Subsurface layer:
9 to 18 inches—yellowish brown silt loam; pale brown mottles

Subsoil:
18 to 26 inches—yellowish brown silt loam; black iron-manganese masses
26 to 34 inches—yellowish brown silt loam; light gray iron depletions
34 to 44 inches—light yellowish brown and strong brown gravelly silty clay loam; light gray iron depletions

Figure 15.—An area of Slabtown silt loam, 8 to 15 percent slopes, is in the foreground. An area of Frederick gravelly silt loam, 15 to 25 percent slopes, is in the background. These areas are commonly used for hay production.

44 to 75 inches—yellowish brown clay; yellowish red mottles and light brownish gray iron depletions

Minor Components

Dissimilar components:
- Philo soils, which are susceptible to flooding; on flood plains
- Maurertown soils, which are susceptible to flooding and ponding and are poorly drained; in backswamps of stream terraces
- Carbo soils, which are moderately deep to limestone bedrock; on adjacent hills
- Frederick and Watahala soils, which are well drained and have more clay in the upper part of the soil than the Slabtown soil; on adjacent hills
- Soils that are well drained; on landforms similar to those of the Slabtown soil

Similar components:
- Soils that are on slopes of more than 15 percent; on landforms similar to those of the Slabtown soil
- Soils that have a dense, hard layer in the subsoil; on landforms similar to those of the Slabtown soil
- Soils that have more gravel in the surface layer than the Slabtown soil; on similar landforms

Soil Properties and Qualities

Available water capacity: High (about 10.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr or 1.4 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Moderately well drained

Depth to seasonal water saturation: About 18 to 36 inches
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: Medium
Surface fragments: None
Parent material: Local fine-loamy colluvium derived from limestone and shale over clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Well suited to grass-legume hay; moderately suited to corn and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak
- Because of the slope, conditions for operating machinery are unsafe, the operating efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.

- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: G
Hydric soil: No

34B—Tumbling loam, 3 to 8 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes
Elevation: 2,000 to 3,200 feet
Size of areas: 5 to 50 acres

Map Unit Composition

Tumbling and similar soils: Typically 80 percent, ranging from about 75 to 85 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 16 inches—yellowish brown clay loam
16 to 34 inches—strong brown clay loam
34 to 44 inches—strong brown clay loam; red mottles
44 to 62 inches—yellowish red clay loam; yellowish brown mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on adjacent hills
- Nicelytown soils, which are moderately well drained; on landforms similar to those of the Tumbling soil
- Oriskany soils, which have more rock fragments and more sand and less clay in the soil than the Tumbling soil; on similar landforms

Similar components:
- Soils that are very stony on the surface; on landforms similar to those of the Tumbling soil
- Soils that have more sand and less clay than the Tumbling soil; on similar landforms
- Soils that have rounded cobbles on the surface; on landforms similar to those of the Tumbling soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained

Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Clayey colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

Suitability: Well suited to corn and grass-legume hay; moderately suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak; moderately suited to eastern white pine
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- This soil is well suited to building sites.

Septic tank absorption fields

- This soil is well suited to septic tank absorption fields.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength may result in structural damage to local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: O
Hydric soil: No

34C—Tumbling loam, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes
Elevation: 2,000 to 3,200 feet
Size of areas: 5 to 50 acres

Map Unit Composition

Tumbling and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 16 inches—yellowish brown clay loam
16 to 34 inches—strong brown clay loam
34 to 44 inches—strong brown clay loam; red mottles
44 to 62 inches—yellowish red clay loam; yellowish brown mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on adjacent hills
- Nicelytown soils, which are moderately well drained; on landforms similar to those of the Tumbling soil
- Oriskany soils, which have more rock fragments, more sand, and less clay in the soil than the Tumbling soil; on similar landforms

Similar components:
- Soils that are very stony on the surface; on landforms similar to those of the Tumbling soil
- Soils that have more sand and less clay than the Tumbling soil; on similar landforms
- Soils that have rounded cobbles on the surface; on landforms similar to those of the Tumbling soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Clayey colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

Suitability: Well suited to grass-legume hay; moderately suited to corn and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak; moderately suited to eastern white pine
- Because of the slope, conditions for operating machinery are unsafe, the operating efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength may result in structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: O
Hydric soil: No

34D—Tumbling loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes
Elevation: 2,000 to 3,200 feet
Size of areas: 5 to 75 acres

Map Unit Composition

Tumbling and similar soils: Typically 80 percent, ranging from about 75 to 85 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 16 inches—yellowish brown clay loam
16 to 34 inches—strong brown clay loam
34 to 44 inches—strong brown clay loam; red mottles
44 to 62 inches—yellowish red clay loam; yellowish brown mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on adjacent hills

- Nicelytown soils, which are moderately well drained; on landforms similar to those of the Tumbling soil
- Oriskany soils, which have more rock fragments, more sand, and less clay in the soil than the Tumbling soil; on similar landforms

Similar components:
- Soils that are very stony on the surface; on landforms similar to those of the Tumbling soil
- Soils that have more sand and less clay than the Tumbling soil; on similar landforms
- Soils that have rounded cobbles on the surface; on landforms similar to those of the Tumbling soil
- Soils that are on slopes of more than 25 percent

Soil Properties and Qualities

Available water capacity: Moderate (about 8.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Clayey colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak; moderately suited to eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength may result in structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: O
Hydric soil: No

35C—Tumbling loam, karst, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and areas in valleys; in areas with karst topography
Position on the landform: Footslopes
Elevation: 2,000 to 3,200 feet
Size of areas: 5 to 50 acres

Map Unit Composition

Tumbling and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 16 inches—yellowish brown clay loam
16 to 34 inches—strong brown clay loam
34 to 44 inches—strong brown clay loam; red mottles
44 to 62 inches—yellowish red clay loam; yellowish brown mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on adjacent hills
- Nicelytown soils, which are moderately well drained; on landforms similar to those of the Tumbling soil
- Oriskany soils, which have more rock fragments, more sand, and less clay in the soil than the Tumbling soil; on similar landforms

Similar components:
- Soils that are very stony on the surface; on landforms similar to those of the Tumbling soil
- Soils that are on slopes of less than 8 percent

Soil Properties and Qualities

Available water capacity: Moderate (about 8.3 inches)

Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Clayey colluvium derived from sandstone and shale

Use and Management Considerations

General concerns and considerations

Numerous sinkholes occur in areas of this map unit. The risk of ground-water pollution is higher in karst areas. Sinks vary in their ability to filter pollutants. Some sinkholes may be direct pathways from the land surface to ground water. In most cases, karstic aquifers cannot filter contaminated ground water sufficiently to render it potable at a discharge site. Any soil amendments applied to the soil surface may wash into the ground water during periods of precipitation. In many cases, chemicals such as fertilizers, herbicides, and pesticides may be transmitted directly to domestic wells in a matter of hours. Concentrations of livestock in or near sinkholes may also contribute to the pollution of ground water. The presence of sinkholes indicates that additional sinkholes may develop in the future.

Cropland

Suitability: Well suited to grass-legume hay; moderately suited to alfalfa hay; not suited to corn
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- Karst (sinkhole) areas increase the potential for ground-water contamination.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Karst (sinkhole) areas increase the potential for ground-water contamination.

Woodland

Suitability: Well suited to northern red oak; moderately suited to eastern white pine
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Because of the potential for sinkhole collapse, building site development in karst areas is not recommended.

Septic tank absorption fields

- Sinkholes (karst areas) increase the potential for ground-water contamination from

the effluent from conventional septic systems; septic systems should not be located near sinkholes.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength may result in structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.
- Collapsing sinkholes may damage local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: O
Hydric soil: No

35D—Tumbling loam, karst, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and areas in valleys; in areas with karst topography
Position on the landform: Footslopes
Elevation: 2,000 to 3,200 feet
Size of areas: 5 to 75 acres

Map Unit Composition

Tumbling and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 16 inches—yellowish brown clay loam
16 to 34 inches—strong brown clay loam
34 to 44 inches—strong brown clay loam; red mottles
44 to 62 inches—yellowish red clay loam; yellowish brown mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on adjacent hills
- Nicelytown soils, which are moderately well drained; on landforms similar to those of the Tumbling soil
- Oriskany soils, which have more rock fragments, more sand, and less clay in the soil than the Tumbling soil; on similar landforms

Similar components:
- Soils that are very stony on the surface; on landforms similar to those of the Tumbling soil
- Soils that are on slopes of more than 25 percent

Soil Properties and Qualities

Available water capacity: Moderate (about 8.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Clayey colluvium derived from sandstone and shale

Use and Management Considerations

General concerns and considerations

Numerous sinkholes occur in the areas of this map unit. The risk of ground-water pollution is higher in karst areas. Sinks vary in their ability to filter pollutants. Some sinkholes may be direct pathways from the land surface to ground water. In most cases, karstic aquifers cannot filter contaminated ground water sufficiently to render the water potable at a discharge site. Any soil amendments applied to the soil surface may wash into the ground water during periods of precipitation. In many cases, chemicals such as fertilizers, herbicides, and pesticides may be transmitted directly to domestic wells in a matter of hours. Concentrations of livestock in or near sinkholes may also contribute to the pollution of ground water. The presence of sinkholes indicates that additional sinkholes may develop in the future.

Cropland

Suitability: Moderately suited to grass-legume hay and alfalfa hay; not suited to corn
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- Karst (sinkhole) areas increase the potential for ground-water contamination.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Karst (sinkhole) areas increase the potential for ground-water contamination.

Woodland

Suitability: Well suited to northern red oak; moderately suited to eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Because of the potential for sinkhole collapse, building site development in karst areas is not recommended.

Septic tank absorption fields

- Sinkholes (karst areas) increase the potential for ground-water contamination from the effluent from conventional septic systems; septic systems should not be located near sinkholes.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength may result in structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.
- Collapsing sinkholes may damage local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: O
Hydric soil: No

36C—Tumbling loam, 8 to 15 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes
Elevation: 2,000 to 3,200 feet
Size of areas: 25 to 350 acres

Map Unit Composition

Tumbling and similar soils: Typically 80 percent, ranging from about 75 to 85 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 16 inches—yellowish brown clay loam
16 to 34 inches—strong brown clay loam
34 to 44 inches—strong brown clay loam; red mottles
44 to 62 inches—yellowish red clay loam; yellowish brown mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on adjacent hills
- Nicelytown soils, which are moderately well drained; on landforms similar to those of the Tumbling soil
- Oriskany soils, which have more rock fragments, more sand, and less clay in the soil than the Tumbling soil; on similar landforms

Similar components:
- Soils that have fewer or more stones on the surface than the Tumbling soil; on similar landforms
- Soils that have more sand and less clay than the Tumbling soil; on similar landforms
- Soils that are on slopes of less than 8 percent; on landforms similar to those of the Tumbling soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: About 0.1 to 3.0 percent rounded stones
Parent material: Clayey colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Large stones on the surface may restrict the operation of some farm machinery.

Woodland

Suitability: Well suited to northern red oak; moderately suited to eastern white pine
- Because of the slope, conditions for operating machinery are unsafe, the operating efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength may result in structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6s
Virginia soil management group: O
Hydric soil: No

36D—Tumbling loam, 15 to 35 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes
Elevation: 2,000 to 3,200 feet
Size of areas: 25 to 350 acres

Map Unit Composition

Tumbling and similar soils: Typically 80 percent, ranging from about 75 to 85 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 16 inches—yellowish brown clay loam
16 to 34 inches—strong brown clay loam
34 to 44 inches—strong brown clay loam; red mottles
44 to 62 inches—yellowish red clay loam; yellowish brown mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on adjacent hills
- Nicelytown soils, which are moderately well drained; on landforms similar to those of the Tumbling soil
- Oriskany soils, which have more rock fragments, more sand, and less clay in the soil than the Tumbling soil; on similar landforms

Similar components:
- Soils that have fewer or more stones on the surface than the Tumbling soil; on similar landforms
- Soils that have more sand and less clay than the Tumbling soil; on similar landforms
- Soils that are on slopes of more than 35 percent; on landforms similar to those of the Tumbling soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None

Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 0.1 to 3.0 percent rounded stones
Parent material: Clayey colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Well suited to northern red oak; moderately suited to eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- The low soil strength may result in structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: O
Hydric soil: No

37—Udorthents-Urban land complex, 0 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and valleys
Position on the landform: Areas such as towns, highways, housing developments, industrial parks, landfills, shopping centers, or other man-made areas; excluding mines or gravel quarries

Elevation: 1,900 to 3,000 feet
Size of areas: 30 to 300 acres

Map Unit Composition

Udorthents and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Urban land: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Udorthents

Udorthents vary to the extent that a typical pedon was not selected. Udorthents have resulted from disturbance of soil by land leveling, excavation, or filling. They consist of loamy and clayey soil material and varying amounts of rock fragments. Depth to hard bedrock varies from a few inches to more than 5 feet. Drainage is variable. Areas range from severely compacted to slightly compacted. Reaction is variable.

Urban land

This part of the map unit consists of areas covered by asphalt roadways or parking lots, concrete structures, buildings, and other impervious surfaces.

Minor Components

Dissimilar components:
- Atkins soils, which are poorly drained and susceptible to flooding and ponding; on undisturbed flood plains
- Frederick soils, which are well drained and very deep to bedrock; on undisturbed hills
- Nicelytown soils, which are moderately well drained and very deep to bedrock; on undisturbed footslopes and stream terraces
- Rock outcrops

Use and Management Considerations

Onsite investigation is needed to determine the suitability of any area for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: None assigned
Virginia soil management group: None assigned
Hydric soils: No

38C—Watahala gravelly silt loam, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Summits and shoulders
Elevation: 2,100 to 2,950 feet
Size of areas: 5 to 80 acres

Map Unit Composition

Watahala and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 2 inches—dark yellowish brown gravelly silt loam

Subsurface layer:
2 to 17 inches—light yellowish brown gravelly silt loam

Subsoil:
17 to 25 inches—light yellowish brown gravelly loam
25 to 29 inches—strong brown gravelly clay loam; yellowish red mottles
29 to 62 inches—yellowish red clay; brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Watahala soil
- Slabtown soils, which are moderately well drained; on concave footslopes

Similar components:
- Frederick soils, which have more clay in the upper part of the subsoil than the Watahala soil and fewer chert gravel in the soil layers beneath the surface layer; on similar landforms
- Soils that are on slopes of less than 8 percent; on landforms similar to those of the Watahala soil
- Soils that are very stony on the surface; on landforms similar to those of the Watahala soil
- Soils that have cobbly surface layers; on landforms similar to those of the Watahala soil

Soil Properties and Qualities

Available water capacity: Low (about 3.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr or 1.4 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: About 0.5 to 2.0 percent coarse angular gravel and about 0 to 1.0 percent angular cobbles
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

- Because of the limited available water capacity, plants may suffer from moisture stress.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- Because of the slope, conditions for operating machinery are unsafe, the operating efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: M
Hydric soil: No

38D—Watahala gravelly silt loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills (fig. 16)
Position on the landform: Summits, shoulders, and backslopes
Elevation: 2,100 to 2,950 feet
Size of areas: 5 to 150 acres

Map Unit Composition

Watahala and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Figure 16.—Areas of Watahala gravelly silt loam, 15 to 25 percent slopes, typically have few chert cobbles on the surface.

Typical Profile

Surface layer:
0 to 2 inches—dark yellowish brown gravelly silt loam

Subsurface layer:
2 to 17 inches—light yellowish brown gravelly silt loam

Subsoil:
17 to 25 inches—light yellowish brown gravelly loam
25 to 29 inches—strong brown gravelly clay loam; yellowish red mottles
29 to 62 inches—yellowish red clay; brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Watahala soil
- Slabtown soils, which are moderately well drained; on concave footslopes

Similar components:
- Frederick soils, which have more clay in the upper part of the subsoil than the Watahala soil and fewer chert gravel in the soil layers underneath the surface layer; on similar landforms
- Soils that are very stony on the surface; on landforms similar to those of the Watahala soil
- Soils that have cobbly surface layers; on landforms similar to those of the Watahala soil

Soil Properties and Qualities

Available water capacity: Low (about 3.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr or 1.4 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 0.5 to 2.0 percent coarse angular gravel and about 0 to 1.0 percent angular cobbles
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- Because of the limited available water capacity, plants may suffer from moisture stress.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: M
Hydric soil: No

38E—Watahala gravelly silt loam, 25 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Shoulders and backslopes
Elevation: 2,100 to 2,950 feet
Size of areas: 25 to 300 acres

Map Unit Composition

Watahala and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 2 inches—dark yellowish brown gravelly silt loam

Subsurface layer:
2 to 17 inches—light yellowish brown gravelly silt loam

Subsoil:
17 to 25 inches—light yellowish brown gravelly loam
25 to 29 inches—strong brown gravelly clay loam; yellowish red mottles
29 to 62 inches—yellowish red clay; brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Watahala soil
- Slabtown soils, which are moderately well drained; on concave footslopes

Similar components:
- Frederick soils, which have more clay in the upper part of the subsoil than the Watahala soil and fewer chert gravel in the soil layers underneath the surface layer; on similar landforms
- Soils that are very stony on the surface; on landforms similar to those of the Watahala soil
- Soils that have cobbly surface layers; on landforms similar to those of the Watahala soil

Soil Properties and Qualities

Available water capacity: Low (about 3.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr or 1.4 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 0.5 to 2.0 percent coarse angular gravel and about 0 to 1.0 percent angular cobbles
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: M
Hydric soil: No

38F—Watahala gravelly silt loam, 35 to 55 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Elevation: 2,100 to 2,950 feet
Size of areas: 25 to 100 acres

Map Unit Composition

Watahala and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 2 inches—dark yellowish brown gravelly silt loam

Subsurface layer:
2 to 17 inches—light yellowish brown gravelly silt loam

Subsoil:
17 to 25 inches—light yellowish brown gravelly loam
25 to 29 inches—strong brown gravelly clay loam; yellowish red mottles
29 to 62 inches—yellowish red clay; brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Watahala soil
- Slabtown soils, which are moderately well drained; on concave footslopes
- Beech Grove soils, which are very shallow to limestone bedrock; on landforms similar to those of the Watahala soil
- Rock outcrops on landforms similar to those of the Watahala soil

Similar components:
- Frederick soils, which have more clay in the upper part of the subsoil than the Watahala soil and have fewer chert gravel in the soil layers underneath the surface layer; on similar landforms
- Soils that are very stony on the surface; on landforms similar to those of the Watahala soil
- Soils that have cobbly surface layers; on landforms similar to those of the Watahala soil

Soil Properties and Qualities

Available water capacity: Low (about 3.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr or 1.4 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 0.5 to 2.0 percent coarse angular gravel and about 0 to 1.0 percent angular cobbles
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the slope, the use of mechanical planting equipment is impractical.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland

Land capability class: 7e
Virginia soil management group: M
Hydric soil: No

39C—Watahala gravelly silt loam, 8 to 15 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Summits
Elevation: 2,100 to 2,950 feet
Size of areas: 5 to 80 acres

Map Unit Composition

Watahala and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 2 inches—dark yellowish brown gravelly silt loam

Subsurface layer:
2 to 17 inches—light yellowish brown gravelly silt loam

Subsoil:
17 to 25 inches—light yellowish brown gravelly loam
25 to 29 inches—strong brown gravelly clay loam; yellowish red mottles
29 to 62 inches—yellowish red clay; brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Watahala soil
- Slabtown soils, which are moderately well drained; on concave footslopes
- Beech Grove soils, which are very shallow to limestone bedrock; on landforms similar to those of the Watahala soil
- Soils that are shallow to hard bedrock; on landforms similar to those of the Watahala soil
- Soils that have significantly more chert gravel in the subsoil than the Watahala soil; on landforms similar to those of the Watahala soil
- Rock outcrops on landforms similar to those of the Watahala soil

Similar components:
- Frederick soils, which have more clay in the upper part of the subsoil than the Watahala soil and fewer chert gravel in the soil layers underneath the surface layer; on similar landforms
- Soils that are on slopes of less than 8 percent; on landforms similar to those of the Watahala soil
- Soils that have fewer or more stones on the surface; on landforms similar to those of the Watahala soil

Soil Properties and Qualities

Available water capacity: Low (about 3.7 inches)

Figure 17.—Most areas of Watahala gravelly silt loam, 8 to 15 percent slopes, extremely stony, are used for timber production.

Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr or 1.4 µm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: About 3.0 to 15.0 percent angular stones
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine (fig. 17)
- Because of the slope, conditions for operating machinery are unsafe, the operating efficiency of log trucks is reduced, and the use of some mechanical planting equipment may be restricted.

- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.
- Because of the amount of rock fragments on the surface, the traction of wheeled harvest equipment may be reduced.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: M
Hydric soil: No

39D—Watahala gravelly silt loam, 15 to 35 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Shoulders and backslopes
Elevation: 2,100 to 2,950 feet
Size of areas: 25 to 300 acres

Map Unit Composition

Watahala and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 2 inches—dark yellowish brown gravelly silt loam

Subsurface layer:
2 to 17 inches—light yellowish brown gravelly silt loam

Subsoil:
17 to 25 inches—light yellowish brown gravelly loam
25 to 29 inches—strong brown gravelly clay loam; yellowish red mottles
29 to 62 inches—yellowish red clay; brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Watahala soil
- Slabtown soils, which are moderately well drained; on concave footslopes
- Beech Grove soils, which are very shallow to limestone bedrock; on landforms similar to those of the Watahala soil
- Soils that are shallow to hard bedrock; on landforms similar to those of the Watahala soil
- Soils that have significantly more chert gravel in the subsoil than the Watahala soil; on similar landforms
- Rock outcrops on landforms similar to those of the Watahala soil

Similar components:
- Frederick soils, which have more clay in the upper part of the subsoil than the Watahala soil and fewer chert gravel in the soil layers underneath the surface layer; on similar landforms
- Soils that have fewer or more stones on the surface; on landforms similar to those of the Watahala soil

Soil Properties and Qualities

Available water capacity: Low (about 3.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr or 1.4 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 3.0 to 15.0 percent angular stones
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.

- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.
- Because of the amount of rock fragments on the surface, the traction of wheeled harvest equipment may be reduced.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: M
Hydric soil: No

39E—Watahala gravelly silt loam, 35 to 55 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Elevation: 2,100 to 2,950 feet
Size of areas: 25 to 300 acres

Map Unit Composition

Watahala and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 2 inches—dark yellowish brown gravelly silt loam

Subsurface layer:
2 to 17 inches—light yellowish brown gravelly silt loam

Subsoil:
17 to 25 inches—light yellowish brown gravelly loam
25 to 29 inches—strong brown gravelly clay loam; yellowish red mottles
29 to 62 inches—yellowish red clay; brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Watahala soil
- Slabtown soils, which are moderately well drained; on concave footslopes
- Beech Grove soils, which are very shallow to limestone bedrock; on landforms similar to those of the Watahala soil
- Soils that are shallow to hard bedrock; on landforms similar to those of the Watahala soil
- Soils that have significantly more chert gravel in the subsoil than the Watahala soil; on similar landforms
- Rock outcrops on landforms similar to those of the Watahala soil

Similar components:
- Frederick soils, which have more clay in the upper part of the subsoil than the Watahala soil and fewer chert gravel in the soil layers underneath the surface layer; on similar landforms
- Soils that are on slopes of more than 55 percent; on landforms similar to those of the Watahala soil
- Soils that have fewer or more stones on the surface; on landforms similar to those of the Watahala soil

Soil Properties and Qualities

Available water capacity: Low (about 3.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.2 in/hr or 1.4 μm/sec)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 3.0 to 15.0 percent angular stones
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.

- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.
- Because of the amount of rock fragments on the surface, the traction of wheeled harvest equipment may be reduced.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the high content of clay in the subsurface layer, the difficulty of digging, filling, and compacting the soil material in shallow excavations is increased.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of this soil as base material for local roads and streets is restricted.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: M
Hydric soil: No

40F—Weikert-Rough-Rock outcrop complex, 70 to 100 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains (fig. 18)
Position on the landform: Shoulders and backslopes; Rock outcrop occurs as near-vertical cliffs in some areas
Elevation: 1,900 to 3,450 feet
Size of areas: 15 to 250 acres

Map Unit Composition

Note: These Weikert and Rough soils and areas of Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Weikert and similar soils: Typically 35 percent, ranging from about 30 to 40 percent
Rough and similar soils: Typically 30 percent, ranging from about 25 to 30 percent
Rock outcrop: Typically 25 percent, ranging from about 25 to 30 percent

Figure 18.—An area of Weikert-Rough-Rock outcrop complex, 70 to 100 percent slopes. This map unit is unsuited to most uses because of very steep slopes, shallowness of the soils, and an abundance of rock outcrops.

Typical Profile

Weikert

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown channery silt loam

Subsurface layer:
3 to 6 inches—yellowish brown very channery silt loam

Subsoil:
6 to 11 inches—yellowish brown extremely channery silt loam

Substratum:
11 to 17 inches—yellowish brown extremely channery silt loam

Soft bedrock:
17 inches—shale bedrock

Rough

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 3 inches—brown channery silt loam

Subsoil:
3 to 6 inches—yellowish brown very channery silt loam

Substratum:
6 to 8 inches—yellowish brown extremely channery silt loam

Hard bedrock:
8 inches—shale bedrock

Rock outcrop

This part of the map unit consists of outcrops of shale bedrock that occur as near-vertical cliffs in some areas.

Minor Components

Dissimilar components:
- Oriskany soils, which are very deep to bedrock; on footslopes
- Shelocta soils, which are very deep to bedrock and have fewer rock fragments in the soil than the Weikert and Berks soils; on footslopes

Similar components:
- Berks soils, which are moderately deep to shale bedrock; on landforms similar to those of the Weikert and Rough soils
- Soils that are on slopes of less than 70 percent; on landforms similar to those of the Weikert and Rough soils

Properties and Qualities of the Weikert and Rough Soils

Available water capacity: Weikert—very low (about 1.3 inches); Rough—very low (about 0.9 inch)
Slowest saturated hydraulic conductivity: Weikert—high (about 2.0 in/hr or 14.1 µm/sec); Rough—moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Weikert—shallow (10 to 20 inches); Rough—very shallow (less than 10 inches)
Depth to root-restrictive feature: Weikert—10 to 20 inches to bedrock (lithic); Rough—4 to 10 inches to bedrock (lithic)
Drainage class: Weikert—well drained; Rough—somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Weikert—high; Rough—very high
Surface fragments: None
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak; poorly suited to northern red oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.

- The maintenance of haul roads and log landings is increased because of the coarse textured soil layers.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Conditions for log trucks may be unsafe because of the low soil strength.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Weikert and Rough—7s; Rock outcrop—8s
Virginia soil management group: Weikert and Rough—JJ; Rock outcrop—none assigned
Hydric soils: No

41D—Westmoreland-Culleoka complex, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits, shoulders, and backslopes
Elevation: 2,600 to 3,850 feet
Size of areas: 100 to 750 acres

Map Unit Composition

Note: These Westmoreland and Culleoka soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Westmoreland and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Culleoka and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Westmoreland

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 16 inches—yellowish brown silt loam
16 to 34 inches—yellowish brown silty clay loam
34 to 39 inches—yellowish brown channery silty clay loam

Substratum:
39 to 47 inches—yellowish brown extremely channery silt loam

Hard bedrock:
47 inches—shale bedrock

Culleoka

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown gravelly silt loam

Subsoil:
3 to 11 inches—yellowish brown silt loam
11 to 22 inches—yellowish brown channery silty clay loam

Substratum:
22 to 27 inches—dark yellowish brown very channery silt loam

Hard bedrock:
27 inches—siltstone bedrock

Minor Components

Dissimilar components:
- Calvin soils, which are moderately deep to siltstone bedrock, have more rock fragments in the soil than the Westmoreland and Culleoka soils, and are redder; on similar landforms
- Berks soils, which are moderately deep to shale bedrock, can be more acidic than the Westmoreland and Culleoka soils, and have more rock fragments in the soil; on similar landforms
- Oriskany soils, which are very deep to bedrock and have more rock fragments in the soil than the Westmoreland and Culleoka soils; on footslopes
- Rough soils, which are very shallow to shale bedrock, can be more acidic than the Westmoreland and Culleoka soils, and have more rock fragments in the soil; on similar landforms
- Weikert soils, which are shallow to shale bedrock, can be more acidic than the Westmoreland and Culleoka soils, and have more rock fragments in the soil; on similar landforms

Similar components:
- Bland soils, which are moderately deep to limestone bedrock and have more clay than the Westmoreland and Culleoka soils; on similar landforms
- Soils that are on slopes of less than 15 percent; on landforms similar to those of the Westmoreland and Culleoka soils
- Soils that are very bouldery or very stony on the surface; on landforms similar to those of the Westmoreland and Culleoka soils

Soil Properties and Qualities

Available water capacity: Westmoreland—moderate (about 6.3 inches); Culleoka—low (about 3.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 μm/sec)
Depth class: Westmoreland—deep (40 to 60 inches); Culleoka—moderately deep (20 to 40 inches)
Depth to root-restrictive feature: Westmoreland—40 to 60 inches to bedrock (lithic); Culleoka—20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Westmoreland—fine-loamy residuum weathered from limestone and shale; Culleoka—fine-loamy residuum weathered from shale, siltstone, and limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak and chestnut oak
- Bedrock may interfere with the construction of haul roads and log landings.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: U
Hydric soils: No

41E—Westmoreland-Culleoka complex, 25 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Shoulders and backslopes
Elevation: 2,600 to 3,850 feet
Size of areas: 100 to 1,000 acres

Map Unit Composition

Note: These Westmoreland and Culleoka soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Westmoreland and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Culleoka and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Westmoreland

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 16 inches—yellowish brown silt loam
16 to 34 inches—yellowish brown silty clay loam
34 to 39 inches—yellowish brown channery silty clay loam

Substratum:
39 to 47 inches—yellowish brown extremely channery silt loam

Hard bedrock:
47 inches—shale bedrock

Culleoka

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown gravelly silt loam

Subsoil:
3 to 11 inches—yellowish brown silt loam
11 to 22 inches—yellowish brown channery silty clay loam

Substratum:
22 to 27 inches—dark yellowish brown very channery silt loam

Hard bedrock:
27 inches—siltstone bedrock

Minor Components

Dissimilar components:
- Calvin soils, which are moderately deep to siltstone bedrock, have more rock fragments in the soil than the Westmoreland and Culleoka soils, and are redder; on similar landforms
- Berks soils, which are moderately deep to shale bedrock, can be more acidic than the Westmoreland and Culleoka soils, and have more rock fragments in the soil; on similar landforms
- Oriskany soils, which are very deep to bedrock and have more rock fragments in the soil than the Westmoreland and Culleoka soils; on footslopes
- Rough soils, which are very shallow to shale bedrock, can be more acidic than the Westmoreland and Culleoka soils, and have more rock fragments in the soil; on similar landforms
- Weikert soils, which are shallow to shale bedrock, can be more acidic than the Westmoreland and Culleoka soils, and have more rock fragments in the soil; on similar landforms

Similar components:
- Bland soils, which are moderately deep to limestone bedrock and have more clay than the Westmoreland and Culleoka soils; on similar landforms
- Soils that are on slopes of more than 35 percent; on landforms similar to those of the Westmoreland and Culleoka soils
- Soils that are very bouldery or very stony on the surface; on landforms similar to those of the Westmoreland and Culleoka soils

Soil Properties and Qualities

Available water capacity: Westmoreland—moderate (about 6.3 inches); Culleoka—low (about 3.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr or 4.2 µm/sec)
Depth class: Westmoreland—deep (40 to 60 inches); Culleoka—moderately deep (20 to 40 inches)
Depth to root-restrictive feature: Westmoreland—40 to 60 inches to bedrock (lithic); Culleoka—20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Westmoreland—fine-loamy residuum weathered from limestone and shale; Culleoka—fine-loamy residuum weathered from shale, siltstone, and limestone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.

Woodland

Suitability: Well suited to northern red oak and chestnut oak
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, conditions for operating machinery are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: U
Hydric soils: No

W—Water

This map unit is in the Southern Applachian Ridges and Valleys Major Land Resource Area. It includes ponds, lakes, creeks, rivers, and reservoirs.

This map unit is not assigned any interpretive groups.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for agricultural waste management. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of gravel, sand, reclamation material, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, somewhat limited,* and *very limited*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate

gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Crops and Pasture

Fred Rogers, District Conservationist, Natural Resources Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed. The system of land capability classification used by the Natural Resources Conservation Service and the Virginia Agronomic Land Use Evaluation System are explained. Prime farmland is also discussed.

Effective pasture management practices include maintaining a mixture of grasses and legumes, rotating pasture, deferring grazing, controlling undesirable vegetation, and using proper stocking rates.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

The farms in Bland County have decreased in number and increased in size since 1960. Livestock and forage production are the main sources of income on these farms. The main types of livestock are beef cattle, dairy cattle, and horses. Other types include goats and sheep. The main forage crops are mixed grass-legume hay and alfalfa hay. Corn is grown mainly for silage. Grain and specialty crops are grown in small areas. Grain crops include corn, oats, and wheat. Specialty crops include tobacco and vegetables.

Soil and water conservation practices are necessary on almost all of the cropland in the county. The most common conservation practices are conservation tillage, stripcropping, crop rotations that include grasses and legumes, winter cover crops, grassed waterways, and diversions. The most common system of conservation tillage is no-till planting. Rye is the primary cover crop in areas where no-till corn is grown.

Because of the slope, stoniness, and depth to bedrock, many soils are limited to less intensive uses, such as hay and pasture. Grass-clover hay is the primary hay crop, but alfalfa has made a comeback since the early 1960’s, when it was almost eliminated by the alfalfa weevil. No-till alfalfa has been particularly successful. The grasses grown for hay in the county are mainly orchardgrass and fescue mixed with red clover. The pastures dominantly support cool-season grasses, such as orchardgrass and fescue. Pastures in areas where access to farm machinery is limited tend to support fescue.

Many farmers use their grassland for both hay and pasture. This dual use is most common in areas where fescue is stockpiled for winter grazing. One or two hay cuttings are made in spring and summer, additional nitrogen fertilizer is applied in August, and cattle graze the accumulated growth during winter. Another common dual use is one in which cattle are allowed to graze the regrowth after the first cutting of orchardgrass.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher

or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification and the Virginia Soil Management Group of map units in the survey are also shown in the table.

The yields are on based VALUES—the Virginia Agronomic Land Use Evaluation System *(21)*. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

Realistic yield goals can be maintained over a long-term basis through proper nutrient management and other soil amendments such as lime. Applications of nitrogen and phosphorus from organic and inorganic forms should be done according to approved nutrient management practices and regulations.

Pasture yields are expressed in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit *(18)*. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, forestland, wildlife habitat, or recreation.

The capability classification of the soils in this survey area is given in the section “Detailed Soil Map Units” and in table 5.

Virginia Soil Management Groups

The Virginia Agronomic Land Use Evaluation System (VALUES) is a system used to rank soils for management and productivity *(21)*. VALUES places each soil series in Virginia into one of 43 management groups. The format of the management groups, A through QQ, include the following soil characteristics—regional occurrence; parent material; landscape position or influence; solum thickness; dominant profile features, such as texture; available water capacity for plants; and internal soil drainage. Yields that are both economically and environmentally feasible were assigned to each management group, based on yields of field trial crop data and research. The following paragraphs describe the soil management groups in Bland County.

Group A. The soils in this group formed in alluvial parent materials and are on gently sloping flood plains or stream terraces which have watersheds that originate west of the Blue Ridge. These soils are deep or very deep and are medium textured throughout. They have a high available water capacity and are well drained.

Group G. The soils of this group formed in locally transported, medium textured sediments of either colluvial or alluvial origin that overlie a wide range of residual materials. These soils are in landscape positions that include footslopes and toeslopes, the heads of drainageways, depressions, and narrow upland drainageways. These deep and very deep soils are silty to loamy in the upper part of the subsoil, which is underlain with clayey to stony materials. They have a moderately high available water capacity and are moderately well drained or somewhat poorly drained.

Group H. The soils of this group formed in alluvium along streams or terraces. They are moderately deep to very deep, have silty to clay loam subsurface layers, and have a moderately high available water capacity. They are somewhat poorly drained or poorly drained, unless artificial drainage is provided. If artificial drainage is provided, the productive capacity of these soils is significantly increased.

Group L. The soils of this group formed from old transported deposits of alluvium or colluvium. These soils are common on stream terraces, footslopes, and older,

elevated, upland landscapes that were once stream terraces. They are deep or very deep, have medium textured surface layers, have more clayey subsurface layers, and commonly contain gravel and rounded stones. They have a moderate or high available water capacity and typically are well drained.

Group M. The soils of this group formed in material weathered from carbonate rocks. These soils are on upland summits and side slopes. They are deep or very deep and have reddish brown clayey subsurface layers that contain coarse fragments in some areas. They have a moderate available water capacity, unless the content of coarse fragments is significantly high, and they are well drained.

Group O. The soils of this group formed from transported materials ranging from mountain colluvium to old alluvium on dissected uplands and deposits on old elevated river terraces. These very deep to shallow soils have very dark red clayey subsurface layers, which have significant amounts of coarse fragments in some areas. They have a moderate available water capacity and are well drained.

Group U. The soils of this group formed from a variety of residual parent materials ranging from Triassic sediments to sandstone, shale, and limestone to colluvium from these materials. These moderately deep to shallow soils commonly have fine-loamy subsurface layers. They commonly have coarse fragments making up one-third of the soil volume and, as a result, have a moderate or moderately low available water capacity. They are well drained or moderately well drained.

Group Y. The soils of this group formed from the residuum of weathered limestone, shale, or other carbonate-influenced rocks. These shallow to moderately deep soils represent upland landscapes. They have clayey subsurface layers, which contain coarse fragments in some areas. They have a moderate or low available water capacity where they are shallow to bedrock. They are mostly well drained.

Group CC. The soils of this group formed in a range of parent materials that include alluvium and colluvium. These soils occur on a variety of landscapes, including uplands, stream terraces, colluvial areas, and bottomlands. They commonly have a moderately deep solum, are very deep to bedrock, have clayey-skeletal to coarse-loamy subsurface layers (have as much as 70 percent coarse fragments in some areas), and have a moderately low available water capacity. They are well drained.

Group FF. The soils of this group formed in sandstone and shale residual parent materials and mountain colluvium. These soils are on steeply dissected uplands and mountain side slopes. They are moderately shallow and mostly have loamy-skeletal subsurface layers, which may contain 80 percent, or more, coarse fragments. As a result the available water capacity is low or very low. The soils are well drained or moderately well drained.

Group GG. The soils of this group formed in cherty limestone or other residuum. These soils are on ridgetops and side slopes. They are very deep to moderately deep and have loamy-skeletal subsurface layers, which may contain 60 percent, or more, coarse fragments. As a result, the available water capacity low. The soils are well drained.

Group JJ. The soils of this group formed from a wide variety of residual parent materials, ranging from sandstone, shale, and limestone to phyllite or schist. These soils are shallow to moderately deep, dominantly are loamy-skeletal throughout, and contain 30 to 70 percent coarse fragments. This group includes some very deep soils if the natural soil porosity has been disturbed. The soils of this group have a very low available water capacity and are well drained.

Group NN. The soils of this group are undrained. These soils formed in alluvium along streams or on terraces. They are moderately deep to very deep, have silty to clay loam subsurface layers, have a moderately high available water capacity, and are somewhat poorly drained or poorly drained.

The management groups for the map units in the survey area are given in the section “Detailed Soil Map Units” and in table 5.

Prime Farmland

Table 6 lists the map units in the survey area that are considered prime farmland. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation’s food supply.

Prime farmland is of major importance in meeting the Nation’s short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation’s prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 9,046 acres in the survey area, or nearly 6 percent of the total acreage, meets the requirement for prime farmland. This land is on flood plains along small creeks and rivers, and on low stream terraces and intermediate stream terraces along rivers. Historically, this land has been used primarily for agricultural purposes, mainly hayland, pasture, and a few crops.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

For some soils identified in table 6 as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

Hydric Soils

This section lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site *(6, 8)*.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology *(3, 8, 9, 10)*. Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural

vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part *(4)*. These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established *(5)*. These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” *(15)* and “Keys to Soil Taxonomy” *(14)* and in the “Soil Survey Manual” *(19)*.

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in “Field Indicators of Hydric Soils in the United States” *(6)*.

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

The following map units meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This information can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site *(6, 8)*.

2A Atkins fine sandy loam, 0 to 3 percent slopes, frequently flooded
22A Maurertown silt loam, 0 to 3 percent slopes, rarely flooded

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The following map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

23B Nicelytown silt loam, 3 to 8 percent slopes
23C Nicelytown silt loam, 8 to 15 percent slopes
25A Ogles-Pope-Philo complex, 0 to 3 percent slopes, occasionally flooded
28A Philo fine sandy loam, 0 to 3 percent slopes, occasionally flooded
29A Pope fine sandy loam, 0 to 3 percent slopes, occasionally flooded
33B Slabtown silt loam, 3 to 8 percent slopes
33C Slabtown silt loam, 8 to 15 percent slopes
37 Udorthents-Urban land complex, 0 to 25 percent slopes

Agricultural Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

Table 7, parts I, II, and III, show the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of this table, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the table are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (overland flow of wastewater, rapid infiltration of wastewater, and slow rate treatment of wastewater).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth,

microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

Overland flow of wastewater is a process in which wastewater is applied to the upper reaches of sloped land and allowed to flow across vegetated surfaces, sometimes called terraces, to runoff-collection ditches. The length of the run generally is 150 to 300 feet. The application rate ranges from 2.5 to 16.0 inches per week. It commonly exceeds the rate needed for irrigation of cropland. The wastewater leaves solids and nutrients on the vegetated surfaces as it flows downslope in a thin film.

Most of the water reaches the collection ditch, some is lost through evapotranspiration, and a small amount may percolate to the ground water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, and the design and construction of the system. Reaction and the cation-exchange capacity affect absorption. Reaction, salinity, and the sodium adsorption ratio affect plant growth and microbial activity. Slope, permeability, depth to a water table, ponding, flooding, depth to bedrock or a cemented pan, stones, and cobbles affect design and construction. Permanently frozen soils are unsuitable for waste treatment.

Rapid infiltration of wastewater is a process in which wastewater applied in a level basin at a rate of 4 to 120 inches per week percolates through the soil. The wastewater may eventually reach the ground water. The application rate commonly exceeds the rate needed for irrigation of cropland. Vegetation is not a necessary part of the treatment; hence, the basins may or may not be vegetated. The thickness of the soil material needed for proper treatment of the wastewater is more than 72 inches. As a result, geologic and hydrologic investigation is needed to ensure proper design and performance and to determine the risk of ground-water pollution.

The ratings in the table are based on the soil properties that affect the risk of pollution and the design, construction, and performance of the system. Depth to a water table, ponding, flooding, and depth to bedrock or a cemented pan affect the risk of pollution and the design and construction of the system. Slope, stones, and cobbles also affect design and construction. Permeability and reaction affect performance. Permanently frozen soils are unsuitable for waste treatment.

Slow rate treatment of wastewater is a process in which wastewater is applied to land at a rate normally between 0.5 inch and 4.0 inches per week. The application rate commonly exceeds the rate needed for irrigation of cropland. The applied wastewater is treated as it moves through the soil. Much of the treated water may percolate to the ground water, and some enters the atmosphere through evapotranspiration. The applied water generally is not allowed to run off the surface. Waterlogging is prevented either through control of the application rate or through the use of tile drains, or both.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, and the application of waste. The properties that affect absorption include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, depth to bedrock or a cemented pan, reaction, the cation-exchange capacity, and slope. Reaction, the sodium adsorption ratio, salinity, and bulk density affect plant growth and microbial activity. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Forestland Productivity and Management

The tables described in this section can help forest owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of forestland management.

Forestland Productivity

In table 8, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged,

unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the “National Forestry Manual” *(12)*, which is available at the local office of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Forestland Management

In table 9, parts I through V, interpretive ratings are given for various aspects of forestland management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified aspect of forestland management. *Well suited* indicates that the soil has features that are favorable for the specified management aspect and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified management aspect. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified management aspect. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified management aspect or that extreme measures are needed to overcome the undesirable soil properties.

Proper planning for timber harvesting is essential to minimize the potential impact to soil and water quality. A harvest plan should include logging roads, log decks, streamside management zones, stream crossings, skid trails, schedule of activities, and Best Management Practices (BMP’s) for each activity. Forests should be managed to increase economic and environmental benefits. A forest stewardship plan should be developed to guide management and utilization of the woodlands.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating class terms for fire damage and seedling mortality are expressed as *low, moderate,* and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils. More detailed information about the criteria used in the ratings is available in the “National Forestry Manual” *(12)*, which is available at the local office of the Natural Resources Conservation Service or on the Internet.

For *limitations affecting construction of haul roads and log landings*, the ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates that no significant limitations affect construction activities, *moderate* indicates that one or

more limitations can cause some difficulty in construction, and *severe* indicates that one or more limitations can make construction very difficult or very costly.

The ratings of *suitability for log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The soils are described as well suited, moderately suited, or poorly suited to use as log landings.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of forest equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

Ratings in the column *hazard of off-road or off-trail erosion* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *hazard of erosion on roads and trails* are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and *severe* indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the column *suitability for mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

Ratings in the column *suitability for mechanical site preparation (deep)* are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to

a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Ratings in the column *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

Ratings in the column *potential for seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

Recreational Development

In table 10, parts I and II, the soils of the survey area are rated according to limitations that affect their suitability for recreational development. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the table are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in this table can be supplemented by other information in this survey, for example, interpretations for dwellings without basements, for local roads and streets, and for septic tank absorption fields.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the

areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Wildlife Habitat

Bland County has a variety of wildlife species. White-tailed deer, black bear, wild turkey, ruffed grouse, raccoon, ground squirrel, fox squirrel, gray squirrel, opossum, bobcat, red fox, gray fox, coyote, skunk, and wood thrush are common in the forested mountain areas, especially on Bailegap, Berks, Brushy, Calvin, Culleoka, Dekalb,

Gilpin, Lily, Westmoreland, and Weikert soils. Cottontail rabbit, groundhog, quail, mourning dove, and woodcock are on upland pastures and open fields throughout the county, especially on Frederick, Carbo, Tumbling, and Watahala soils.

Beaver, muskrat, and mink are found along Wolf Creek, Walker Creek, Little Walker Creek, Kimberling Creek, and some of the smaller streams, especially on Pope, Ogles, Philo, Nicelytown, and Alonzville soils.

Mallard, woodduck, blackduck, Canadian goose, blue-winged teal, and numerous warblers inhabit the wetland areas of Atkins soils during migration periods.

Wolf Creek, Walker Creek, Little Walker Creek, and Kimberling Creek provide habitat for small-mouth bass, large-mouth bass, rock bass, catfish, bluegill, sunfish, brown trout, brook trout, and rainbow trout. Stocked trout fishing is permitted in season. Native brook trout inhabit some of the remote mountain streams in the county.

Numerous songbirds, including many varieties of warblers, sparrows, wrens, and flycatchers, most of which are migratory, inhabit the survey area. Birds of prey, such as hawks and owls, are also common.

Several species of bats inhabit caves scattered throughout the karst areas of Bland County.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading “Soil Properties.”

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential,

available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, reclamation material, roadfill, and topsoil; plan structures for water management; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Table 11, parts I and II, show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and

do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

Table 12, parts I and II, show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The

limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the

movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Construction Materials

Table 13, parts I and II, give information about the soils as potential sources of gravel, sand, reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

Gravel and *sand* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 13, part I, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to

evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

In table 13, part II, the rating class terms are *good, fair,* and *poor*. The features that limit the soils as sources of reclamation material, roadfill, and topsoil are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of these materials. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Soil Properties

Table 15 gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages

are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

Physical Soil Properties

Table 16 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$- or $^{1}/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in micrometers per second or inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook" *(13)*,

which is available at the local office of the Natural Resources Conservation Service or on the Internet.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Soil Properties

Table 17 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Water Features

Table 18 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top *(upper limit)* and base *(lower limit)* of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

Table 19 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical,

chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness of the restrictive layer, which significantly affects the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(14, 15)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 20 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Ultisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning humid, plus *ult*, from Ultisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludults (*Hapl*, meaning minimal horizonation, plus *udult*, the suborder of the Ultisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludults.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, active, mesic Typic Hapludults.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each

series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” *(19)* and in the “Field Book for Describing and Sampling Soils” *(16)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(15)* and in “Keys to Soil Taxonomy” *(14)*. Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Alonzville Series

Physiographic province: Valley and Ridge
Landform: Low stream terraces
Parent material: Fine-loamy alluvium derived from sandstone, siltstone, and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 3 to 8 percent

Associated Soils

- Maurertown soils, which are poorly drained and have a fine particle size; on landforms similar to those of the Alonzville soils
- Nicelytown soils, which are moderately well drained and have a fine-loamy particle size; on the higher stream terraces
- Pope soils, which are well drained and have a coarse-loamy particle size; on flood plains

Taxonomic Classification

Fine-loamy, siliceous, semiactive, mesic Typic Hapludults

Typical Pedon

Alonzville silt loam, 3 to 8 percent slopes, rarely flooded; in Bland County; about 0.9 mile southwest of Hollybrook, 0.2 mile south of the junction of Highways VA-631 and VA-612, about 0.5 mile south of the junction of Highways VA-606 and VA-612, in a hayfield; Mechanicsburg, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 10 minutes 43 seconds N. and long. 80 degrees 58 minutes 58 seconds W.

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable, nonsticky, nonplastic; common fine and many very fine roots; many very fine irregular pores; 3 percent well rounded sandstone gravel; moderately acid; abrupt wavy boundary.

BA—6 to 11 inches; brown (7.5YR 4/4) silt loam; weak medium subangular blocky structure; friable, slightly sticky, nonplastic; common very fine and fine roots; many very fine irregular pores; 3 percent well rounded sandstone gravel; moderately acid; clear wavy boundary.

Bt1—11 to 28 inches; strong brown (7.5YR 4/6) silty clay loam; common medium faint strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable, slightly sticky, nonplastic; common very fine and fine roots; few fine and common very fine irregular pores; few faint discontinuous clay films on all faces of peds; 4 percent well rounded sandstone gravel; moderately acid; clear wavy boundary.

Bt2—28 to 37 inches; strong brown (7.5YR 5/6) silt loam; many medium distinct brownish yellow (10YR 6/8) mottles; moderate medium subangular blocky structure; friable, slightly sticky, nonplastic; few very fine roots; common very fine irregular pores; few faint patchy clay films on all faces of peds; many fine distinct

light gray (10YR 7/2) iron depletions throughout; 5 percent well rounded sandstone gravel; strongly acid; clear wavy boundary.

C—37 to 62 inches; brown (7.5YR 4/4) very gravelly sandy loam; massive; friable, slightly sticky, nonplastic; few fine roots; many very fine irregular pores; many medium prominent reddish yellow (7.5YR 6/8) iron-manganese masses on faces of peds; 40 percent rounded sandstone gravel; strongly acid.

Range in Characteristics

Solum thickness: 30 to 60 inches or more
Depth to bedrock: More than 60 inches
Reaction: Strongly acid to moderately acid (in unlimed areas)
Rock fragments: 0 to 15 percent in the Ap, BA, and Bt horizons and 0 to 50 percent in the C horizon

Ap horizon:
Hue—7.5YR or 10YR
Value—3 or 4
Chroma—2 or 3
Texture—silt loam

BA horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture—silt loam, loam, or fine sandy loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 8
Texture—silty clay loam, clay loam, sandy clay loam, or loam

C horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, sandy clay loam, or loam

Atkins Series

Physiographic province: Valley and Ridge
Landform: Flood plains along small creeks
Parent material: Fine-loamy alluvium derived from sandstone, siltstone, and shale
Drainage class: Poorly drained
Slowest saturated hydraulic conductivity: Moderately low
Depth class: Very deep
Slope range: 0 to 3 percent

Associated Soils

- Ogles soils, which are well drained and have a loamy-skeletal particle size; on landforms similar to those of the Atkins soils
- Philo soils, which are moderately well drained and have a coarse-loamy particle size; on landforms similar to those of the Atkins soils
- Pope soils, which are well drained and have a coarse-loamy particle size; on landforms similar to those of the Atkins soils

Taxonomic Classification

Fine-loamy, mixed, active, acid, mesic Fluvaquentic Endoaquepts

Typical Pedon

Atkins fine sandy loam, 0 to 3 percent slopes, frequently flooded; in Bland County; about 1.9 miles northeast of Mechanicsburg, about 0.2 mile south of the junction of Highways VA-607 and VA-606, about 1.5 miles northwest of the junction of Highways VA-606 and VA-42, in pasture; Mechanicsburg, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 10 minutes 29 seconds N. and long. 80 degrees 55 minutes 33 seconds W.

A1—0 to 3 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; few fine and many very fine roots; common medium distinct yellowish brown (10YR 5/8) masses of oxidized iron on surfaces along root channels; strongly acid; abrupt smooth boundary.

A2—3 to 9 inches; gray (10YR 5/1) fine sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; common very fine roots; common medium distinct yellowish brown (10YR 5/8) masses of oxidized iron on surfaces along root channels; strongly acid; clear smooth boundary.

Bg1—9 to 23 inches; gray (10YR 5/1) sandy loam; weak fine subangular blocky structure; friable, nonsticky, nonplastic; few very fine and fine roots; common medium distinct yellowish brown (10YR 5/8) masses of oxidized iron on surfaces along root channels; 5 percent rounded sandstone gravel; strongly acid; gradual smooth boundary.

Bg2—23 to 37 inches; dark gray (10YR 4/1) sandy loam; weak fine subangular blocky structure; friable, nonsticky, nonplastic; few very fine roots; common medium distinct yellowish brown (10YR 5/8) masses of oxidized iron on surfaces along root channels; 10 percent rounded sandstone gravel; strongly acid; gradual smooth boundary.

Cg1—37 to 56 inches; dark gray (10YR 4/1) gravelly sandy loam; massive; friable, slightly sticky, nonplastic; few medium distinct yellowish brown (10YR 5/8) masses of oxidized iron on surfaces along root channels; 15 percent rounded sandstone gravel; strongly acid; gradual smooth boundary.

Cg2—56 to 62 inches; dark gray (10YR 4/1) silty clay loam; massive; friable, slightly sticky, slightly plastic; few fine distinct yellowish brown (10YR 5/8) masses of oxidized iron on surfaces along root channels; 10 percent rounded sandstone gravel; strongly acid.

Range in Characteristics

Solum thickness: 25 to 50 inches
Depth to bedrock: More than 60 inches
Reaction: Very strongly acid or strongly acid above a depth of 40 inches (in unlimed areas) and very strongly acid to moderately acid below a depth of 40 inches
Rock fragments (content, type, size): 0 to 20 percent in the A and B horizons and 0 to 60 percent in the C horizon; rounded sandstone gravel and cobbles

A horizon:
Hue—10YR
Value—4 to 7
Chroma—1 to 4
Texture (fine-earth fraction)—fine sandy loam

Bg horizon:
Hue—7.5YR to 5Y or neutral
Value—4 to 7

Chroma—0 to 2
Texture (fine-earth fraction)—sandy loam, loam, silt loam, or silty clay loam

Cg horizon:
Hue—7.5YR to 5Y or neutral
Value—4 to 7
Chroma—0 to 2
Texture (fine-earth fraction)—sandy loam, loam, silt loam, or silty clay loam

Bailegap Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Fine-loamy residuum weathered from sandstone, siltstone, and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Deep
Slope range: 15 to 70 percent

Associated Soils

- Dekalb soils, which are moderately deep to sandstone bedrock and have a loamy-skeletal particle size; on landforms similar to those of the Bailegap soils
- Gilpin soils, which are moderately deep to shale bedrock; on landforms similar to those of the Bailegap soils
- Lily soils, which are moderately deep to sandstone bedrock; on landforms similar to those of the Bailegap soils
- Oriskany soils, which are very deep to bedrock, have a loamy-skeletal particle size, and have many stones on the surface; on footslopes and in areas adjacent to drainageways

Taxonomic Classification

Fine-loamy, siliceous, semiactive, mesic Typic Hapludults

Typical Pedon

Bailegap fine sandy loam, 15 to 35 percent slopes, very stony; in Bland County; about 1.0 mile southeast of Bluefield, on East River Mountain, about 1.5 miles northeast of the end of maintained Highway VA-613, about 1.0 mile northwest of Laurel Fork Church, in woodland; Bastian, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 14 minutes 40 seconds N. and long. 81 degrees 11 minutes 37 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.
Oe—1 to 2 inches; moderately decomposed plant material.
A—2 to 4 inches; brown (7.5YR 4/3) fine sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; many very fine, fine, medium, and coarse roots; 5 percent subangular sandstone gravel; very strongly acid; clear wavy boundary.
E—4 to 9 inches; reddish brown (5YR 4/4) fine sandy loam; weak medium granular structure; friable, slightly sticky, nonplastic; common medium and coarse roots; 5 percent subangular sandstone gravel; strongly acid; clear wavy boundary.
Bt1—9 to 28 inches; yellowish red (5YR 4/6) loam; weak very fine and fine subangular blocky structure; friable, slightly sticky, slightly plastic; few fine and medium roots; few faint clay films on all faces of peds; 5 percent subangular sandstone gravel; strongly acid; clear wavy boundary.
Bt2—28 to 43 inches; reddish brown (5YR 4/4) clay loam; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; few faint

clay films on all faces of peds; 10 percent subangular sandstone gravel; strongly acid; gradual wavy boundary.
Cr—43 to 46 inches; reddish brown (5YR 4/4) soft sandstone bedrock; abrupt broken boundary.
R—46 inches; hard sandstone bedrock.

Range in Characteristics

Solum thickness: 40 to 60 inches
Depth to bedrock: 40 to 60 inches
Reaction: Very strongly acid or strongly acid
Rock fragments: 5 to 35 percent in the upper part of the solum and 5 to 60 percent in the lower part of the solum and in the substratum

A horizon:
Hue—10YR to 5YR
Value—3 or 4
Chroma—2 or 3
Texture—fine sandy loam

E horizon:
Hue—10YR to 5YR
Value—4 to 6
Chroma—3 to 6
Texture (fine-earth fraction)—loam, silt loam, fine sandy loam, or sandy loam

Bt horizon:
Hue—7.5YR to 2.5YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—clay loam, sandy clay loam, silt loam, or loam

Beech Grove Series

Physiographic province: Valley and Ridge
Landform: Hills
Parent material: Loamy residuum weathered from limestone
Drainage class: Excessively drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very shallow
Slope range: 25 to 100 percent

Associated Soils

- Benthole soils, which are very deep to bedrock and have a loamy-skeletal particle size; on footslopes that are downslope of cliffs
- Carbo soils, which are moderately deep to bedrock and have a very fine particle size; on landforms similar to those of the Beech Grove soils and on adjacent hills

Taxonomic Classification

Loamy, mixed, superactive, nonacid, mesic Lithic Udorthents

Typical Pedon

Beech Grove silt loam in an area of Rock outcrop-Beech Grove-Benthole complex, 25 to 100 percent slopes; in Bland County; about 3.5 miles east of Mechanicsburg, 1.9 miles northeast of the intersection of Highways VA-670 and VA-738, about 1.8 miles southeast of the intersection of Highways VA-42 and VA-606, in woodland;

Mechanicsburg, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 13 minutes 39 seconds N. and long. 80 degrees 52 minutes 41 seconds W.

A—0 to 5 inches; very dark brown (10YR 2/2) silt loam; moderate very fine granular structure; friable, slightly sticky, slightly plastic; common coarse and many very fine roots; 5 percent subangular limestone gravel and 5 percent subangular limestone channers; slight effervescence, by HCl, 1 normal; slightly alkaline; abrupt smooth boundary.
R—5 inches; limestone bedrock.

Range in Characteristics

Solum thickness: 1 to 8 inches
Depth to bedrock: 1 to 8 inches
Reaction: Slightly acid to moderately alkaline (in unlimed areas)
Rock fragments: 0 to 35 percent

A horizon:
Hue—10YR
Value—2 to 4
Chroma—2 or 3
Texture (fine-earth fraction)—silt loam

Benthole Series

Physiographic province: Valley and Ridge
Landform: Base of slopes of hills and areas in valleys, mainly below limestone cliffs along creeks and rivers
Parent material: Stony, loamy colluvium derived from limestone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 25 to 100 percent

Associated Soils

- Beech Grove soils, which are very shallow to bedrock and a have loamy particle size; on ledges of cliffs and on hills
- Carbo soils, which are moderately deep to bedrock and have a very fine particle size; on hills

Taxonomic Classification

Loamy-skeletal, mixed, superactive, mesic Typic Hapludalfs

Typical Pedon

Benthole gravelly silt loam in an area of Rock outcrop-Beech Grove-Benthole complex, 25 to 100 percent slopes; in Scott County; near Hilton, about 0.86 mile east-northeast of the intersection of Highways VA-689 and VA-691, about 0.34 mile north-northwest of the intersection of Highways VA-691 and US-58, in woodland; Hilton, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 39 minutes 0 seconds N. and long. 82 degrees 24 minutes 26 seconds W.

Oe—0 to 1 inch; moderately decomposed plant material.
A—1 to 3 inches; very dark grayish brown (10YR 3/2) gravelly silt loam; moderate fine and medium granular structure; friable, moderately sticky, slightly plastic; 20 percent subrounded limestone gravel; neutral; abrupt smooth boundary.
Bt1—3 to 20 inches; brown (10YR 4/3) very cobbly silty clay loam; moderate very fine,

fine, and medium subangular blocky structure; friable, moderately sticky, moderately plastic; many distinct continuous clay films on all faces of peds; 20 percent subrounded limestone gravel and 30 percent subrounded limestone cobbles; neutral; clear wavy boundary.

Bt2—20 to 37 inches; yellowish brown (10YR 5/4) very cobbly silty clay loam; moderate very fine, fine, and medium subangular blocky structure; friable, moderately sticky, moderately plastic; many distinct continuous clay films on all faces of peds; 20 percent subrounded limestone gravel and 30 percent subrounded limestone cobbles; slightly alkaline; clear wavy boundary.

Bt3—37 to 63 inches; dark yellowish brown (10YR 4/4) very cobbly silty clay loam; weak medium and coarse subangular blocky structure; friable, moderately sticky, moderately plastic; many distinct continuous clay films on all faces of peds; 10 percent subrounded limestone stones, 20 percent subrounded limestone gravel, and 25 percent subrounded limestone cobbles; slight effervescence, by HCl, 1 normal; moderately alkaline.

Range in Characteristics

Solum thickness: 20 to more than 60 inches
Depth to bedrock: More than 60 inches
Reaction: Neutral to moderately alkaline (in unlimed areas)
Rock fragments (content, type, size): 15 to 35 percent in the A horizon, 35 to 65 percent in the Bt horizon, and 35 to 90 percent in the C horizon; subrounded limestone gravel, cobbles, and stones

A horizon:
Hue—10YR
Value—2 or 3
Chroma—2 or 3
Texture (fine-earth fraction)—silt loam

Bt horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture (fine-earth fraction)—silt loam, loam, clay loam, or silty clay loam

Berks Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Channery, loamy residuum weathered from shale and siltstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 8 to 70 percent

Associated Soils

- Calvin soils, which are redder than the Berks soils; on similar landforms
- Culleoka and Gilpin soils, which have a fine-loamy particle size; on landforms similar to those of the Berks soils
- Oriskany soils, which are very deep to bedrock and have many stones on the surface; on footslopes
- Rough soils, which are very shallow to bedrock; on landforms similar to those of the Berks soils

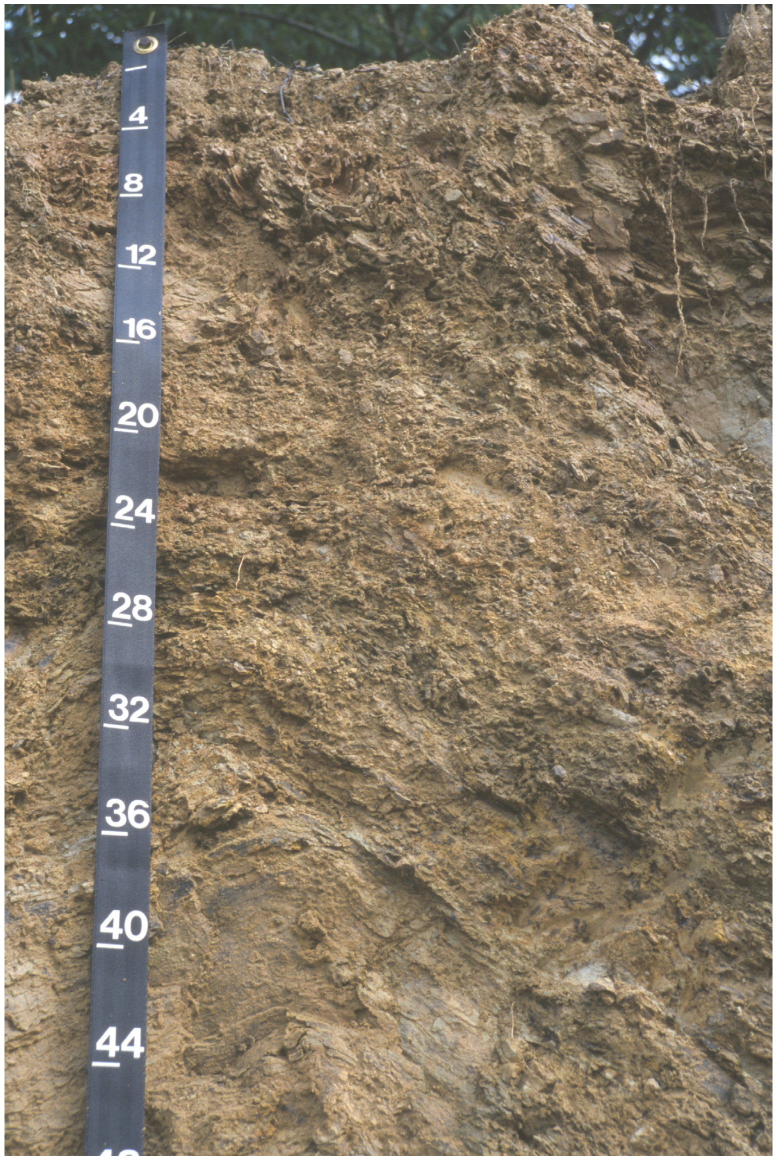


Figure 19.—Profile of Berks very channery silt loam. Shale bedrock is at a depth of 35 inches. Depth is marked in inches.

- Shelocta soils, which are very deep to bedrock and have a fine-loamy particle size; on footslopes
- Weikert soils, which are shallow to bedrock; on landforms similar to those of the Berks soils

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Berks very channery silt loam in an area of Berks-Weikert complex, 15 to 35 percent slopes (fig. 19); in Smyth County; about 4.5 miles northeast of Marion, about 0.4 mile south of the junction of Highways VA-16 and VA-348, about 1.0 mile southwest of Molly's Knob, in woodland; Chatham Hill, Virginia USGS 7.5 Minute Quadrangle,

NAD27; lat. 36 degrees 52 minutes 42 seconds N. and long. 81 degrees 31 minutes 36 seconds W.

Oe—0 to 2 inches; moderately decomposed plant material.

A—2 to 5 inches; brown (10YR 5/3) very channery silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; common coarse and many very fine roots; many very fine interstitial pores; 50 percent angular shale channers; very strongly acid; clear smooth boundary.

Bw1—5 to 15 inches; yellowish brown (10YR 5/6) channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; few fine and medium roots; many very fine interstitial pores; common faint silt coats; 30 percent angular shale channers; very strongly acid; gradual wavy boundary.

Bw2—15 to 26 inches; brownish yellow (10YR 6/8) very channery silt loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; many very fine interstitial pores; common faint silt coats; 55 percent angular shale channers; very strongly acid; clear smooth boundary.

C—26 to 28 inches; strong brown (7.5YR 5/8) extremely channery silt loam; massive; friable, slightly sticky, slightly plastic; few very fine roots; many very fine interstitial pores; 80 percent angular shale channers; very strongly acid; abrupt wavy boundary.

Cr—28 inches; shale bedrock.

Range in Characteristics

Solum thickness: 15 to 30 inches
Depth to bedrock: 20 to 40 inches
Reaction: Extremely acid to strongly acid (in unlimed areas)
Rock fragments (content, type, size): 15 to 50 percent in the upper part of the solum, 30 to 75 percent in the middle and lower parts of the solum, and 35 to 85 percent in the substratum; shale, siltstone, or fine-grained sandstone channers

A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture (fine-earth fraction)—silt loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—silt loam or loam

C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—silt loam or loam

Cr horizon:
Bedrock—soft shale

Bland Series

Physiographic province: Valley and Ridge
Landform: Hills
Parent material: Clayey residuum weathered from limestone

Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 15 to 35 percent

Associated Soils

- Berks soils, which have a loamy-skeletal particle size; on landforms similar to those of the Bland soils
- Carbo soils, which are browner in the subsoil than the Bland soils; on similar landforms
- Culleoka soils, which have a fine-loamy particle size; on landforms similar to those of the Bland soils
- Oriskany soils, which are very deep to bedrock and have many stones on the surface; on footslopes
- Tumbling soils, which are very deep to bedrock; on footslopes
- Westmoreland soils, which are deep to bedrock and have a fine-loamy particle size; on landforms similar to those of the Bland soils

Taxonomic Classification

Fine, mixed, semiactive, mesic Typic Hapludalfs

Typical Pedon

Bland silty clay loam, 25 to 35 percent slopes; in Tazewell County; about 2.3 miles southwest of Tazewell, 1.5 miles south-southeast of the junction of Highways US-460 and VA-16, about 500 yards northwest of the junction of Highways VA-16 and VA-604, in pasture; Tazewell South, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 4 minutes 49 seconds N. and long. 81 degrees 33 minutes 9 seconds W.

Ap—0 to 4 inches; reddish gray (5YR 5/2) silty clay loam; weak fine and medium granular structure; friable, slightly sticky, slightly plastic; many fine roots; many very fine tubular pores; 1 percent subangular limestone channers and 1 percent subangular shale channers; strongly acid; abrupt smooth boundary.

BE—4 to 7 inches; reddish brown (5YR 4/3) silty clay; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; many fine roots; common fine tubular pores; 1 percent subangular limestone channers and 1 percent subangular shale channers; strongly acid; clear smooth boundary.

Bt1—7 to 18 inches; reddish brown (5YR 4/3) silty clay; strong coarse subangular blocky structure; firm, slightly sticky, slightly plastic; common fine roots; common fine and few medium tubular pores; few distinct discontinuous clay films on all faces of peds; moderately acid; gradual smooth boundary.

Bt2—18 to 30 inches; weak red (2.5YR 4/2) silty clay; few medium prominent yellowish red (5YR 5/6) mottles; strong medium and coarse subangular blocky structure; firm, moderately sticky, moderately plastic; few fine roots; few fine tubular pores; common prominent continuous clay films on all faces of peds; slightly acid; gradual smooth boundary.

C—30 to 36 inches; dusky red (2.5YR 3/2) channery clay; massive; firm, moderately sticky, slightly plastic; 30 percent subangular argillaceous limestone channers; neutral; abrupt smooth boundary.

R—36 inches; limestone bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: Strongly acid to neutral (in unlimed areas)

Rock fragments (content, type, size): 0 to 15 percent in the solum and 0 to 50 percent in the substratum; mostly shale channers and some limestone channers

Ap horizon:
Hue—5YR
Value—3 to 5
Chroma—2 or 3
Texture (fine-earth fraction)—silty clay loam

BE horizon:
Hue—5YR
Value—3 or 4
Chroma—2 to 4
Texture (fine-earth fraction)—silty clay, silty clay loam, or silt loam

Bt horizon:
Hue—2.5YR or 5YR
Value—3 or 4
Chroma—3 or 4
Texture (fine-earth fraction)—silty clay or clay

C horizon:
Hue—2.5YR or 5YR
Value—3 or 4
Chroma—3 or 4
Texture (fine-earth fraction)—silt loam, silty clay loam, sity clay, or clay

Brushy Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Gravelly, loamy residuum weathered from chert and cherty limestone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 8 to 55 percent

Associated Soils

- Bailegap soils, which are deep to sandstone bedrock and have a fine-loamy particle size; on landforms similar to those of the Brushy soils
- Berks soils, which are moderately deep to shale bedrock; on landforms similar to those of the Brushy soils
- Dekalb soils, which are moderately deep to sandstone bedrock; on landforms similar to those of the Brushy soils
- Lily soils, which have a fine-loamy particle size; on landforms similar to those of the Brushy soils
- Oriskany soils, which are very deep to bedrock; on footslopes

Taxonomic Classification

Loamy-skeletal, siliceous, semiactive, mesic Typic Hapludults

Typical Pedon

Brushy extremely gravelly loam, 35 to 55 percent slopes, very stony (fig. 20); in Smyth County; about 5.5 miles northwest of Marion, on Walker Mountain, about 1.8 miles northwest of the junction of Highways VA-617 and VA-659, about 3.9 miles west of the junction of Highways VA-16 and VA-348, in woodland; Chatham Hill, Virginia USGS 7.5

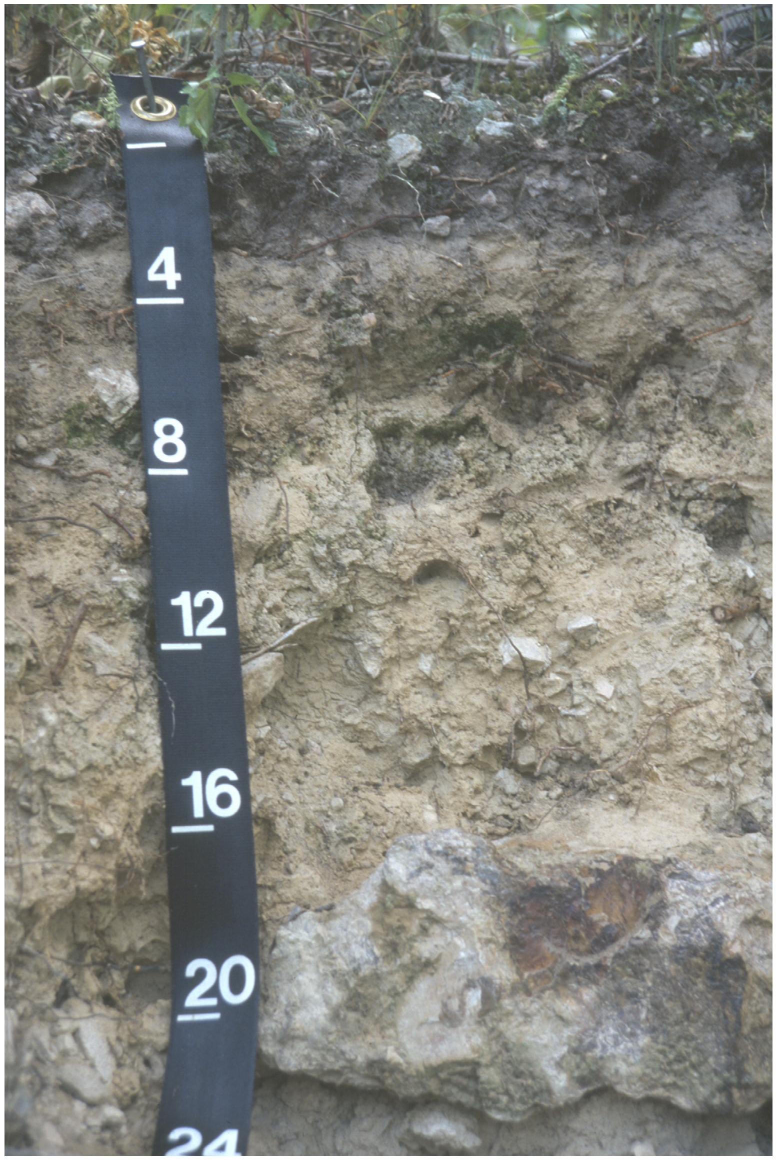


Figure 20.—Profile of Brushy extremely gravelly loam. Chert fragments in the lower part of the profile, beginning at a depth of about 16 inches, are commonly stone size (10 to 25 inches in diameter). Depth is marked in inches.

Minute Quadrangle, NAD27; lat. 36 degrees 52 minutes 38 seconds N. and long. 81 degrees 35 minutes 51 seconds W.

Oe—0 to 2 inches; moderately decomposed plant material.

A—2 to 7 inches; dark yellowish brown (10YR 4/4) extremely gravelly loam; weak medium granular structure; friable, nonsticky, nonplastic; many very fine and fine roots; many fine pores; 75 percent angular chert gravel; extremely acid; clear smooth boundary.

E—7 to 13 inches; pale brown (10YR 6/3) very gravelly loam; weak fine granular structure; friable, nonsticky, nonplastic; common very fine and fine roots; many fine pores; 55 percent angular chert gravel; very strongly acid; abrupt wavy boundary.

Bt1—13 to 27 inches; yellowish brown (10YR 5/4) very gravelly clay loam; weak fine

subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; many fine pores; common distinct clay films on all faces of peds; 45 percent angular chert gravel; very strongly acid; clear wavy boundary.

Bt2—27 to 34 inches; brown (7.5YR 5/4) very gravelly clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; many fine pores; common distinct clay films on all faces of peds; 40 percent angular chert gravel; very strongly acid; abrupt smooth boundary.

R—34 inches; chert bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: Extremely acid to moderately acid (in unlimed areas)
Rock fragments: 25 to 75 percent; less than 35 percent is limited to subhorizons of the Bt horizon; fragments are dominently chert gravel and cobbles

A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 to 4
Texture (fine-earth fraction)—loam

E horizon:
Hue—10YR
Value—6
Chroma—3 or 4
Texture (fine-earth fraction)—loam, silt loam, or fine sandy loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture (fine-earth fraction)—loam, sandy clay loam, or clay loam

Calvin Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Channery, loamy residuum weathered from shale and siltstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Moderately deep
Slope range: 15 to 70 percent

Associated Soils

- Berks soils, which are browner than the Calvin soils; on similar landforms
- Culleoka soils, which a have fine-loamy particle size and are browner than the Calvin soils; on similar landforms
- Dekalb soils, which are moderately deep to sandstone bedrock and are browner than the Calvin soils; on similar landforms
- Rough soils, which are very shallow to bedrock; on landforms similar to those of the Calvin soils
- Weikert soils, which are shallow to shale bedrock and are browner than the Calvin soils; on similar landforms

Figure 21.—Profile of Calvin channery silt loam. Siltstone bedrock is at a depth of 27 inches. Depth is marked in inches.

- Westmoreland soils, which are deep to bedrock, have a fine-loamy particle size, and are browner than the Calvin soils; on similar landforms

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Calvin channery silt loam, 35 to 70 percent slopes (fig. 21); in Smyth County; about 6.0 miles northwest of Marion, about 0.06 mile east of Highway VA-16, about 1.5 miles north of the intersection of Highways VA-16 and VA-348, in woodland; Chatham Hill, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 54 minutes 18 seconds N. and long. 81 degrees 32 minutes 16 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.

A—1 to 4 inches; dark reddish brown (5YR 3/3) channery silt loam; weak fine granular structure; friable, nonsticky, nonplastic; many very fine and fine roots; many very fine interstitial pores; 20 percent angular siltstone channers; very strongly acid; clear smooth boundary.

BA—4 to 9 inches; reddish brown (5YR 4/3) channery silt loam; weak fine subangular blocky structure; friable, nonsticky, nonplastic; common fine and medium and few coarse roots; many very fine interstitial pores; 25 percent angular siltstone channers; very strongly acid; clear smooth boundary.

Bw—9 to 21 inches; reddish brown (5YR 4/3) very channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; few fine and

medium roots; many very fine interstitial pores; 45 percent angular siltstone channers; very strongly acid; clear wavy boundary.

C—21 to 27 inches; reddish brown (5YR 4/3) extremely channery silt loam; massive; friable, nonsticky, nonplastic; few very fine roots; many very fine interstitial pores; 70 percent angular siltstone channers; very strongly acid; abrupt smooth boundary.

R—27 inches; siltstone bedrock.

Range in Characteristics

Solum thickness: 12 to 35 inches
Depth to bedrock: 20 to 40 inches
Reaction: Moderately acid to very strongly acid
Rock fragments: 5 to 25 percent in the A and BA horizons, 25 to 55 percent in the B horizon, and 40 to 80 percent in the C horizon

A horizon:
Hue—5YR
Value—2 to 4
Chroma—2 or 3
Texture (fine-earth fraction)—silt loam

BA horizon:
Hue—2.5YR or 5YR
Value—4 or 5
Chroma—3 or 4
Texture (fine-earth fraction)—silt loam or loam

Bw horizon:
Hue—2.5YR or 5YR
Value—4 or 5
Chroma—3 to 6
Texture (fine-earth fraction)—silt loam or loam

C horizon:
Hue—2.5YR or 5YR
Value—3 to 5
Chroma—2 to 4
Texture (fine-earth fraction)—silt loam or loam

Carbo Series

Physiographic province: Valley and Ridge
Landform: Hills; some areas have karst topography
Parent material: Clayey residuum weathered from limestone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately low
Depth class: Moderately deep
Slope range: 8 to 55 percent

Associated Soils

- Beech Grove soils, which are very shallow to bedrock; on landforms similar to those of the Carbo soils
- Bland soils, which are redder in the subsoil than the Carbo soils; on similar landforms
- Frederick soils, which are very deep to bedrock; on landforms similar to those of the Carbo soils

- Slabtown soils, which are moderately well drained and very deep to bedrock; on concave footslopes and adjacent to drainageways
- Watahala soils, which are very deep to bedrock; on landforms similar to those of the Carbo soils

Taxonomic Classification

Very fine, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Carbo silty clay loam in an area of Carbo-Rock outcrop complex, 8 to 35 percent slopes, eroded; in Smyth County; about 8.5 miles northwest of Marion, about 3.8 miles northwest of the junction of Highways VA-16 and VA-348, about 4.0 miles southwest of the junction of Highways VA-610 and VA-16, in pasture; Chatham Hill, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 54 minutes 17 seconds N. and long. 81 degrees 35 minutes 37 seconds W.

Ap—0 to 5 inches; brown (10YR 4/3) silty clay loam; moderate medium granular structure; friable, slightly sticky, slightly plastic; many very fine, fine, and medium roots; many very fine interstitial pores; neutral; clear smooth boundary.
Bt1—5 to 16 inches; brown (7.5YR 5/4) clay; moderate medium subangular blocky structure; firm, very sticky, very plastic; few very fine and fine roots; common very fine interstitial pores; many distinct clay films on all faces of peds; common manganese masses; neutral; clear wavy boundary.
Bt2—16 to 24 inches; brown (7.5YR 4/4) clay; moderate medium subangular blocky structure; firm, very sticky, very plastic; common very fine roots; few very fine interstitial pores; many distinct clay films on all faces of peds; common manganese masses; neutral; abrupt smooth boundary.
R—24 inches; limestone bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: Slightly acid to mildly alkaline (in unlimed areas)
Rock fragments (content, type, size): 0 to 5 percent; dominantly limestone and chert gravel and some shale channers

Ap horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—3 to 6
Texture—silty clay loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture—clay

Culleoka Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Fine-loamy residuum weathered from shale, siltstone, and limestone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high

Depth class: Moderately deep
Slope range: 15 to 70 percent

Associated Soils

- Berks soils, which have a loamy-skeletal particle size; on landforms similar to those of the Culleoka soils
- Bland soils, which have a fine particle size; on landforms similar to those of the Culleoka soils
- Calvin soils, which have a loamy-skeletal particle size and are redder than the Culleoka soils; on similar landforms
- Oriskany soils, which are very deep and have many stones on the surface; on footslopes
- Westmoreland soils, which are deep to bedrock; on landforms similar to those of the Culleoka soils

Taxonomic Classification

Fine-loamy, mixed, active, mesic Ultic Hapludalfs

Typical Pedon

Culleoka gravelly silt loam in an area of Culleoka-Berks complex, 35 to 70 percent slopes; in Bland County; about 3.0 miles southeast of Bland, about 1.9 miles southeast of the intersection of Highways VA-656 and VA-658, about 2.5 miles south-southeast of the intersection of Highways VA-42 and VA-604, about 1.0 mile northeast of Turkey Gap Shelter, in woodland; Bland, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 4 minutes 33 seconds N. and long. 81 degrees 4 minutes 31 seconds W.

Oe—0 to 1 inch; moderately decomposed plant material.
A—1 to 3 inches; brown (10YR 4/3) gravelly silt loam; moderate very fine granular structure; friable, nonsticky, nonplastic; many fine, medium, and coarse and common very fine roots; many very fine and fine interstitial pores; 5 percent angular sandstone gravel and 15 percent angular siltstone gravel; strongly acid; abrupt wavy boundary.
Bt1—3 to 11 inches; yellowish brown (10YR 5/6) silt loam; weak very fine subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine, fine, medium, and coarse roots; common very fine and fine interstitial pores; common distinct clay films on all faces of peds; 10 percent angular shale channers; strongly acid; clear wavy boundary.
Bt2—11 to 22 inches; yellowish brown (10YR 5/6) channery silty clay loam; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine, fine, and coarse roots; common very fine and fine interstitial pores; common distinct clay films on all faces of peds; 25 percent angular shale channers; strongly acid; clear wavy boundary.
C—22 to 27 inches; dark yellowish brown (10YR 4/6) very channery silt loam; massive; friable, slightly sticky, nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 55 percent angular shale channers; strongly acid; gradual irregular boundary.
R—27 inches; siltstone bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: Strongly acid or moderately acid in the solum (in unlimed areas) and strongly acid to slightly acid in the substratum
Rock fragments (content, type, size): 0 to 35 percent in the A horizon, 10 to 35 percent

in the Bt horizon, and 25 to 80 percent in the C horizon; dominantly shale, siltstone, or fine-grained sandstone gravel or channers

A horizon:
Hue—7.5YR or 10YR
Value—3 or 4
Chroma—2 to 4
Texture (fine-earth fraction)—silt loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture (fine-earth fraction)—loam, silt loam, or silty clay loam

C horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 6
Texture (fine-earth fraction)—loam, silt loam, or silty clay loam

Dekalb Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Gravelly, loamy residuum weathered from sandstone
Drainage class: Somewhat excessively drained
Slowest saturated hydraulic conductivity: High
Depth class: Moderately deep
Slope range: 8 to 80 percent

Associated Soils

- Brushy soils, which are moderately deep to cherty limestone bedrock; on landforms similar to those of the Dekalb soils
- Calvin soils, which are moderately deep to red shale bedrock; on landforms similar to those of the Dekalb soils
- Lily soils, which have a fine-loamy particle size and an argillic horizon; on landforms similar to those of the Dekalb soils
- Oriskany soils, which are very deep to bedrock and have a loamy-skeletal particle size; on footslopes

Taxonomic Classification

Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts

Typical Pedon

Dekalb channery sandy loam, 35 to 55 percent slopes, extremely stony (fig. 22); in Smyth County; about 2.5 miles southeast of Thomas Bridge, on Barton Mountain, about 0.6 mile west of the junction of Highways VA-650 and VA-670, about 1.6 miles east of the junction of Highways VA-650 and VA-720, in woodland; Marion, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 45 minutes 20 seconds N. and long. 81 degrees 31 minutes 7 seconds W.

Oe—0 to 2 inches; moderately decomposed plant material.
A—2 to 5 inches; dark brown (10YR 3/3) channery sandy loam; weak fine granular structure; friable, slightly sticky, nonplastic; many very fine and fine roots; 25 percent angular sandstone channers; strongly acid; abrupt wavy boundary.

Figure 22.—Profile of Dekalb channery sandy loam. Hard sandstone bedrock is at a depth of 22 inches. Depth is marked in inches.

Bw—5 to 24 inches; yellowish brown (10YR 5/6) very channery sandy loam; weak very fine and fine subangular blocky structure; friable, slightly sticky, nonplastic; common very fine and fine roots; 50 percent angular sandstone channers; strongly acid; gradual wavy boundary.

C—24 to 31 inches; yellowish brown (10YR 5/6) extremely channery sandy loam; massive; friable, slightly sticky, nonplastic; few very fine roots; 75 percent angular sandstone channers; strongly acid; abrupt wavy boundary.

R—31 inches; sandstone bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: Extremely acid to moderately acid

Rock fragments: 15 to 60 percent in the solum and 50 to 85 percent in the substratum; average exceeds 35 percent in the particle-size control section; fragments are sandstone and range from gravel to stones

A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 to 4
Texture (fine-earth fraction)—sandy loam

Bw horizon:
Hue—7.5YR or 10YR
Value—5 to 8
Chroma—4 to 8
Texture (fine-earth fraction)—loam, fine sandy loam, or sandy loam

C horizon:
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—4 to 6
Texture (fine-earth fraction)—sandy loam or loamy sand

Frederick Series

Physiographic province: Valley and Ridge
Landform: Hills; some areas have karst topography
Parent material: Clayey residuum weathered from limestone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 8 to 35 percent

Associated Soils

- Carbo soils, which are moderately deep to limestone bedrock; on landforms similar to those of the Frederick soils
- Slabtown soils, which are moderately well drained and have a fine-loamy particle size; on concave footslopes
- Watahala soils, which have a fine-loamy over clayey particle size; on landforms similar to those of the Frederick soils

Taxonomic Classification

Fine, mixed, semiactive, mesic Typic Paleudults

Typical Pedon

Frederick silt loam, 8 to 15 percent slopes (fig. 23); in Smyth County; about 1.0 mile west of Atkins, about 0.5 mile north-northeast of the junction of Highways VA-622 and US-11, about 1.5 mile northeast of the junction of Highways VA-689 and US-11, in a hay field; Atkins, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 52 minutes 10 seconds N. and long. 81 degrees 26 minutes 51 seconds W.

Ap—0 to 8 inches; brown (7.5YR 4/4) silt loam; moderate medium granular structure; friable, slightly sticky, slightly plastic; many fine roots; few very fine tubular pores; 3 percent angular chert gravel; slightly acid; abrupt smooth boundary.
Bt1—8 to 18 inches; red (2.5YR 4/6) silty clay; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; common fine roots; few very

Figure 23.—Profile of Frederick silt loam. The argillic horizon begins at a depth of 6 inches and extends to below a depth of 60 inches. Depth is marked in inches.

fine tubular pores; many distinct clay films on all faces of peds; 5 percent angular chert gravel; strongly acid; diffuse smooth boundary.

Bt2—18 to 35 inches; red (2.5YR 4/6) clay; common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; few fine roots; few very fine tubular pores; many distinct clay films on all faces of peds; 5 percent angular chert gravel; strongly acid; clear wavy boundary.

Bt3—35 to 51 inches; red (2.5YR 4/6) clay; common medium prominent reddish yellow (7.5YR 8/6) and common medium distinct strong brown (7.5YR 4/6) mottles; moderate medium subangular blocky structure; firm, moderately sticky, moderately

plastic; few very fine tubular pores; many distinct clay films on all faces of peds; 5 percent angular chert gravel; strongly acid; gradual wavy boundary.

Bt4—51 to 72 inches; red (2.5YR 4/6) clay; common medium prominent light red (2.5YR 7/6) mottles; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; few very fine tubular pores; many distinct clay films on all faces of peds; 10 percent angular chert gravel; strongly acid.

Range in Characteristics

Solum thickness: More than 60 inches
Depth to bedrock: More than 72 inches
Reaction: Very strongly acid to moderately acid (in unlimed areas)
Rock fragments (content, type): 0 to 30 percent throughout the profile; dominantly chert

Ap horizon:
Hue—7.5YR or 10YR
Value—3 or 4
Chroma—1 to 8
Texture (fine-earth fraction)—silt loam

Bt horizon:
Hue—2.5YR or 5YR; 7.5YR in the upper part of horizon
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—clay, silty clay, silty clay loam, or clay loam in the upper part; clay or silty clay in the lower part

Gilpin Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Fine-loamy residuum weathered from shale and siltstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 8 to 25 percent

Associated Soils

- Bailegap soils, which are deep to sandstone bedrock; on landforms similar to those of the Gilpin soils
- Berks soils, which have a loamy-skeletal particle size; on landforms similar to those of the Gilpin soils
- Lily soils, which are moderately deep to sandstone bedrock; on landforms similar to those of the Gilpin soils
- Shelocta soils, which are very deep to bedrock; on footslopes
- Weikert soils, which are shallow to shale bedrock and have a loamy-skeletal particle size; on landforms similar to those of the Gilpin soils

Taxonomic Classification

Fine-loamy, mixed, active, mesic Typic Hapludults

Typical Pedon

Gilpin silt loam, 8 to 15 percent slopes; in Bland County; about 2.3 miles west of Bland, about 1.5 mile north of the junction of Highways VA-42 and VA-615, about 2.4 miles north-northeast of the junction of highways VA-615 and US-52, in woodland; Big Bend,

Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 5 minutes 49 seconds N. and long. 81 degrees 10 minutes 20 seconds W.

Oe—0 to 1 inch; moderately decomposed plant material.

A—1 to 5 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable, nonsticky, nonplastic; many very fine and fine and few medium and coarse roots; many fine pores; common fine mica flakes; 5 percent subangular shale channers; strongly acid; abrupt smooth boundary.

BA—5 to 9 inches; yellowish brown (10YR 5/4) silt loam; weak medium granular structure; friable, slightly sticky, slightly plastic; common very fine and fine and few medium and coarse roots; many fine pores; common fine mica flakes; 5 percent subangular shale channers; strongly acid; clear wavy boundary.

Bt1—9 to 21 inches; brownish yellow (10YR 6/8) silty clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine, fine, medium, and coarse roots; many fine pores; common faint clay films on all faces of peds; common fine mica flakes; 5 percent subangular shale channers; strongly acid; clear wavy boundary.

Bt2—21 to 26 inches; brownish yellow (10YR 6/8) channery silty clay loam; weak very fine and fine subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine, fine, medium, and coarse roots; many fine pores; common faint clay films on all faces of peds; common fine mica flakes; 25 percent subangular shale channers; strongly acid; gradual wavy boundary.

C—26 to 33 inches; yellowish brown (10YR 5/6) very channery silt loam; few fine faint brownish yellow (10YR 6/6) mottles; massive; friable, slightly sticky, slightly plastic; few very fine roots; many fine pores; common fine mica flakes; 55 percent subangular shale channers; strongly acid; clear wavy boundary.

Cr—33 inches; shale and siltstone bedrock.

Range in Characteristics

Solum thickness: 18 to 36 inches
Depth to bedrock: 20 to 40 inches
Reaction: Extremely acid to strongly acid (in unlimed areas)
Rock fragments: 5 to 30 percent in the solum and 30 to 60 percent in the substratum

A horizon:
Hue—10YR
Value—2 to 4
Chroma—1 to 4
Texture (fine-earth fraction)—silt loam

BA horizon:
Hue—10YR
Value—5 or 6
Chroma—3 or 4
Texture (fine-earth fraction)—silt loam or loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—silt loam, loam, or silty clay loam

C horizon:
Hue—7.5YR or 10YR
Value—4 or 5

Chroma—4 to 6
Texture (fine-earth fraction)—silt loam, loam, or silty clay loam

Jefferson Series

Physiographic province: Valley and Ridge
Landform: Base of slopes of hills and mountains
Parent material: Fine-loamy colluvium derived from sandstone, siltstone, and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Very deep
Slope range: 8 to 25 percent

Associated Soils

- Dekalb soils, which are moderately deep to sandstone bedrock and have a loamy-skeletal particle size; on adjacent hills
- Lily soils, which are moderately deep to sandstone bedrock; on adjacent hills
- Oriskany soils, which have a loamy-skeletal particle size; on landforms similar to those of the Jefferson soils
- Tumbling soils, which have a fine particle size and have fewer stones on the surface than the Jefferson soils; on similar landforms

Taxonomic Classification

Fine-loamy, siliceous, semiactive, mesic Typic Hapludults

Typical Pedon

Jefferson cobbly loam, 15 to 25 percent slopes; in Wythe County; about 1.2 miles southeast of Speedwell, about 1.1 miles southeast of the intersection of Highways US-21 and VA-619, about 1.2 miles northeast of the intersection of US-21 and VA-773, in woodland; Speedwell, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 48 minutes 5 seconds N. and long. 81 degrees 9 minutes 57 seconds W.

Oi—0 to 2 inches; slightly decomposed plant material.
A—2 to 5 inches; dark brown (10YR 3/3) cobbly loam; moderate medium granular structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; 20 percent subrounded sandstone cobbles; very strongly acid; clear wavy boundary.
E—5 to 12 inches; yellowish brown (10YR 5/4) loam; moderate medium granular structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; 10 percent subrounded sandstone cobbles; very strongly acid; gradual smooth boundary.
Bt1—12 to 22 inches; yellowish brown (10YR 5/6) loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium and few coarse roots; common distinct clay films on all faces of peds; 10 percent subrounded sandstone cobbles; strongly acid; gradual smooth boundary.
Bt2—22 to 32 inches; yellowish brown (10YR 5/6) loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium and few coarse roots; common distinct clay films on all faces of peds; 10 percent subrounded sandstone cobbles; strongly acid; gradual smooth boundary.
BC—32 to 61 inches; strong brown (7.5YR 5/8) cobbly clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine and medium roots; many distinct clay films on all faces of peds; 25 percent subrounded sandstone cobbles; strongly acid; clear smooth boundary.
C—61 to 70 inches; strong brown (7.5YR 5/8) cobbly loam; many medium distinct red

(2.5YR 4/8) mottles; massive; friable, slightly sticky, slightly plastic; few distinct clay films on all faces of peds; 25 percent subrounded sandstone cobbles; strongly acid.

Range in Characteristics

Solum thickness: More than 40 inches
Depth to bedrock: More than 60 inches
Reaction: Very strongly acid or strongly acid (in unlimed areas)
Rock fragments (content, type, size): 5 to 35 percent above a depth of about 40 inches and 20 to 80 percent below a depth of 40 inches; combination of subrounded sandstone gravel, cobbles, and stones

A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 or 3
Texture (fine-earth fraction)—loam

E horizon:
Hue—10YR
Value—4 to 6
Chroma—3 or 4
Texture (fine-earth fraction)—loam or fine sandy loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 8
Texture (fine-earth fraction)—clay loam, sandy clay loam, or loam

BC horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—fine sandy loam, sandy loam, sandy clay loam, or loam

C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—fine sandy loam, sandy loam, or loam

Lily Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Fine-loamy residuum weathered from sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 8 to 70 percent

Associated Soils

- Bailegap soils, which are deep to sandstone bedrock; on landforms similar to those of the Lily soils

- Brushy soils, which are moderately deep to cherty limestone bedrock; on landforms similar to those of the Lily soils
- Dekalb soils, which have a loamy-skeletal particle size; on landforms similar to those of the Lily soils
- Gilpin soils, which are moderately deep to shale bedrock; on landforms similar to those of the Lily soils
- Oriskany soils, which are very deep to bedrock and have a loamy-skeletal particle size; on footslopes

Taxonomic Classification

Fine-loamy, siliceous, semiactive, mesic Typic Hapludults

Typical Pedon

Lily sandy loam, 15 to 35 percent slopes, very stony; in Smyth County; about 4.6 miles northwest of Atkins, on Walker Mountain, about 1.3 miles northwest of the junction of Highways VA-622 and VA-694, about 1.5 miles southwest of the junction of Highways VA-622 and VA-610, in woodland; Nebo, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 54 minutes 49 seconds N. and long. 81 degrees 27 minutes 24 seconds W.

Oe—0 to 2 inches; moderately decomposed plant material.

A—2 to 7 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; many fine, medium, and coarse roots; many fine pores; 5 percent subangular sandstone gravel; very strongly acid; clear smooth boundary.

BA—7 to 13 inches; yellowish brown (10YR 5/6) sandy loam; weak fine granular structure; friable, slightly sticky, slightly plastic; common fine and medium roots; many fine pores; 5 percent subangular sandstone gravel; very strongly acid; clear smooth boundary.

Bt—13 to 24 inches; yellowish brown (10YR 5/8) clay loam; moderate medium subangular blocky structure; friable, moderately sticky, slightly plastic; few fine roots; many fine pores; common distinct clay films on all faces of peds; 5 percent subangular sandstone gravel; very strongly acid; clear wavy boundary.

C—24 to 30 inches; yellowish brown (10YR 5/8) sandy loam; massive; friable, slightly sticky, slightly plastic; few very fine roots; many fine pores; 5 percent subangular sandstone gravel; very strongly acid; abrupt smooth boundary.

R—30 inches; sandstone bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: Extremely acid to strongly acid (in unlimed areas)
Rock fragments: 0 to 30 percent above a depth of 24 inches and 0 to 35 percent below a depth of 24 inches

A horizon:
Hue—10YR or 7.5YR
Value—2 to 4
Chroma—2 to 4
Texture (fine-earth fraction)—sandy loam

BA horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—loam, sandy loam, or fine sandy loam

Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—loam, clay loam, or sandy clay loam

C horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—4 to 8
Texture—sandy loam, loam, loamy sand, or sandy clay loam

Maurertown Series

Physiographic province: Valley and Ridge
Landform: Low stream terraces
Parent material: Clayey alluvium derived from limestone, sandstone, and shale
Drainage class: Poorly drained
Slowest saturated hydraulic conductivity: Low
Depth class: Very deep
Slope range: 0 to 3 percent

Associated Soils

- Alonzville soils, which are well drained and have a fine-loamy particle size; on landforms similar to those of the Maurertown soils
- Atkins soils, which have a fine-loamy particle size; on flood plains
- Nicelytown soils, which are moderately well drained and have a fine-loamy particle size; on the higher stream terraces
- Philo soils, which are moderately well drained and have a coarse-loamy particle size; on flood plains
- Pope soils, which are well drained and have a coarse-loamy particle size; on flood plains

Taxonomic Classification

Fine, mixed, semiactive, mesic Typic Endoaqualfs

Typical Pedon

Maurertown silt loam, 0 to 3 percent slopes, rarely flooded; in Smyth County; about 1.5 miles north of Marion, 0.3 mile northeast of the junction of Highways VA-617 and VA-665, about 1.0 mile northeast of Greenwood Church, 0.5 mile south-southeast of Hungry Mother Lake, in a hayfield; Marion, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 51 minutes 40 seconds N. and long. 81 degrees 31 minutes 39 seconds W.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; moderate fine granular structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; few very fine tubular pores; neutral; clear smooth boundary.

BAg—6 to 18 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate fine subangular blocky structure; firm, slightly sticky, slightly plastic; common very fine and fine roots; few very fine tubular pores; common medium prominent irregular yellowish brown (10YR 5/6) masses of oxidized iron on surfaces along root channels; neutral; gradual smooth boundary.

Btg—18 to 41 inches; dark gray (10YR 4/1) silty clay; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; few very fine and fine roots; few fine tubular pores; common distinct continuous clay films on all faces of

peds; common medium prominent irregular yellowish brown (10YR 5/8) masses of oxidized iron on surfaces along root channels; neutral; clear smooth boundary.

Cg1—41 to 48 inches; dark gray (10YR 4/1) silty clay loam; massive; friable, slightly sticky, slightly plastic; few very fine tubular pores; many medium prominent irregular yellowish brown (10YR 5/8) and yellow (10YR 7/8) masses of oxidized iron throughout and many medium distinct irregular light gray (10YR 7/1) iron depletions throughout; 10 percent subrounded sandstone gravel; neutral; gradual smooth boundary.

Cg2—48 to 62 inches; gray (N 5/0) gravelly silty clay loam; massive; friable, slightly sticky, slightly plastic; few fine roots; few very fine tubular pores; common medium prominent irregular brownish yellow (10YR 6/8) masses of oxidized iron throughout and common medium distinct irregular light gray (10YR 7/1) iron depletions throughout; 15 percent subrounded sandstone gravel; neutral.

Range in Characteristics

Solum thickness: 40 to 60 inches or more
Depth to bedrock: More than 60 inches
Reaction: Moderately acid to neutral (in unlimed areas)
Rock fragments (content, type, size): 0 to 15 percent; dominantly rounded sandstone gravel and cobbles

Ap horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—1 or 2
Texture (fine-earth fraction)—silt loam

BAg horizon:
Hue—10YR, 2.5Y, or neutral
Value—4 to 6
Chroma—0 to 2
Texture (fine-earth fraction)—silty clay loam, silt loam, or loam

Btg horizon:
Hue—10YR, 2.5Y, or neutral
Value—4 to 6
Chroma—0 to 2
Texture—silty clay, clay, or silty clay loam

Cg horizon:
Hue—10YR, 2.5Y, or neutral
Value—4 to 6
Chroma—0 to 2
Texture (fine-earth fraction)—silty clay loam, silty clay, or clay

Nicelytown Series

Physiographic province: Valley and Ridge
Landform: High stream terraces and base of slopes of hills
Parent material: Fine-loamy alluvium derived from limestone, sandstone, and shale; some areas are intermixed with colluvium
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 3 to 15 percent

Associated Soils

- Alonzville soils, which are well drained; on the lower stream terraces
- Berks soils, which are well drained, are moderately deep to shale bedrock, and have a loamy-skeletal particle size; on adjacent hills
- Maurertown soils, which are poorly drained and have a fine particle size; on the lower stream terraces
- Tumbling soils, which are well drained and have a fine particle size; on footslopes

Taxonomic Classification

Fine-loamy, siliceous, semiactive, mesic Aquic Paleudults

Typical Pedon

Nicelytown silt loam, 3 to 8 percent slopes; in Bland County; about 1.1 miles west of Grapefield, about 2.5 miles southeast of the junction of Highways VA-662 and VA-61, about 2.3 miles northeast of Gose Knob, in pasture; Cove Creek, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 8 minutes 47 seconds N. and long. 81 degrees 16 minutes 22 seconds W.

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable, nonsticky, nonplastic; many very fine and fine roots; many very fine irregular and tubular pores; 1 percent rounded sandstone gravel; moderately acid; abrupt wavy boundary.

BE—6 to 18 inches; yellowish brown (10YR 5/6) silt loam; common medium faint light yellowish brown (10YR 6/4) mottles; weak fine subangular blocky structure; friable, slightly sticky, nonplastic; many very fine roots; many very fine irregular and tubular pores; common black manganese masses; 3 percent rounded sandstone gravel; strongly acid; gradual wavy boundary.

Bt1—18 to 24 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine roots; many very fine irregular and tubular pores; few faint discontinuous clay films on all faces of peds; few fine prominent light brownish gray (10YR 6/2) iron depletions throughout and common black manganese masses; 5 percent rounded sandstone gravel; strongly acid; clear wavy boundary.

Bt2—24 to 60 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine roots; common very fine tubular and irregular pores; many faint discontinuous clay films on all faces of peds; common medium prominent light gray (10YR 7/1) iron depletions throughout, common medium faint brownish yellow (10YR 6/6) masses of oxidized iron on faces of peds, and common black manganese masses; 10 percent rounded sandstone gravel; strongly acid; clear wavy boundary.

Bt3—60 to 62 inches; yellowish brown (10YR 5/6) very cobbly silty clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine tubular and irregular pores; common faint discontinuous clay films on all faces of peds; common coarse faint strong brown (7.5YR 5/6) masses of oxidized iron on faces of peds and common coarse prominent light gray (10YR 7/1) iron depletions; 35 percent rounded sandstone cobbles; strongly acid.

Range in Characteristics

Solum thickness: More than 60 inches
Depth to bedrock: More than 60 inches
Reaction: Very strongly acid or strongly acid (in unlimed areas)
Rock fragments (content, type, size): 0 to 15 percent in the A and BE horizons and 0 to 35 percent in the Bt horizon; rounded sandstone gravel and cobbles

Ap horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3 or 4
Texture—silt loam

BE horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—silt loam, loam, or fine sandy loam

Bt horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—3 to 8
Texture (fine-earth fraction)—silt loam, silty clay loam, clay loam, or loam

Ogles Series

Physiographic province: Valley and Ridge
Landform: Flood plains along small creeks and major rivers
Parent material: Stony, loamy alluvium derived from sandstone and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Very deep
Slope range: 0 to 5 percent

Associated Soils

- Oriskany soils, which have subrounded rock fragments; on footslopes
- Philo soils, which are moderately well drained and have a coarse-loamy particle size; on landforms similar to those of the Ogles soils
- Pope soils, which a have coarse-loamy particle size; on landforms similar to those of the Ogles soils

Taxonomic Classification

Loamy-skeletal, siliceous, active, mesic Fluventic Dystrudepts

Typical Pedon

Ogles very stony loam, 0 to 5 percent slopes, frequently flooded; in Scott County; near Fort Blackmore, on a wooded flood plain about 0.79 mile southeast of the southernmost intersection of Highways VA-619 and VA-653, about 2.17 miles northwest of the intersection of Highways VA-619 and VA-65; Fort Blackmore, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 47 minutes 58 seconds N. and long. 82 degrees 36 minutes 0 seconds W.

Oe—0 to 2 inches; moderately decomposed plant material.
A—2 to 6 inches; very dark brown (10YR 2/2) very stony loam; weak fine granular structure; very friable, nonsticky, nonplastic; many very fine, fine, and medium roots; common medium interstitial pores; 2 percent well rounded sandstone gravel, 18 percent well rounded sandstone stones, and 20 percent well rounded sandstone cobbles; moderately acid; clear wavy boundary.
BA—6 to 10 inches; dark yellowish brown (10YR 3/4) very stony loam; weak fine granular structure; very friable, nonsticky, nonplastic; many very fine, fine, and medium roots; common medium interstitial pores; 2 percent well rounded

sandstone gravel, 18 percent well rounded sandstone stones, and 20 percent well rounded sandstone cobbles; moderately acid; clear wavy boundary.

Bw—10 to 23 inches; yellowish brown (10YR 5/6) extremely stony sandy loam; weak coarse granular structure; very friable, nonsticky, nonplastic; common very fine and fine and few medium and coarse roots; common medium interstitial pores; 4 percent well rounded sandstone gravel, 34 percent well rounded sandstone stones, and 37 percent well rounded sandstone cobbles; moderately acid; gradual wavy boundary.

C1—23 to 47 inches; dark yellowish brown (10YR 4/6) extremely stony loamy sand; massive; very friable, nonsticky, nonplastic; few very fine and fine roots; common medium interstitial pores; 3 percent well rounded sandstone gravel, 37 percent well rounded sandstone cobbles, and 40 percent well rounded sandstone stones; strongly acid; gradual wavy boundary.

C2—47 to 65 inches; dark yellowish brown (10YR 4/6) extremely stony loamy sand; massive; very friable, nonsticky, nonplastic; few very fine and fine roots; common medium interstitial and few very coarse tubular pores; 3 percent well rounded sandstone gravel, 40 percent well rounded sandstone stones, and 42 percent well rounded sandstone cobbles; strongly acid.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: More than 60 inches
Reaction: Very strongly acid to moderately acid (in unlimed areas)
Rock fragments (content, type, size): 35 to 60 percent in the A horizon and 35 to 85 percent in the B and C horizons; well rounded sandstone gravel, cobbles, and stones

A horizon:
Hue—10YR
Value—2 to 4
Chroma—2 to 4
Texture (fine-earth fraction)—loam

BA horizon:
Hue—10YR
Value—2 to 4
Chroma—2 to 4
Texture (fine-earth fraction)—loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 6
Texture (fine-earth fraction)—loam or sandy loam

C horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture (fine-earth fraction)—sandy loam or loamy sand

Oriskany Series

Physiographic province: Valley and Ridge
Landform: Base of slopes of hills and mountains
Parent material: Stony, loamy colluvium derived from sandstone and shale

Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Very deep
Slope range: 8 to 55 percent

Associated Soils

- Berks soils, which are moderately deep to shale bedrock; on adjacent hills
- Culleoka soils, which are moderately deep to siltstone or shale bedrock and have a fine-loamy particle size; on adjacent hills
- Dekalb soils, which are moderately deep to sandstone bedrock; on adjacent mountains
- Jefferson soils, which have a fine-loamy particle size; on landforms similar to those of the Oriskany soils
- Tumbling soils, which have a fine particle size and have fewer stones on the surface than the Oriskany soils; on similar landforms
- Westmoreland soils, which are deep to bedrock and have a fine-loamy particle size; on adjacent hills

Taxonomic Classification

Loamy-skeletal, siliceous, semiactive, mesic Typic Hapludults

Typical Pedon

Oriskany gravelly fine sandy loam, 15 to 35 percent slopes, extremely stony (fig. 24); in Tazewell County; about 2.4 miles south of Bluefield, about 0.3 mile east of Highway VA-662 and 0.5 mile northwest of Highway VA-61, about 1.5 mile west-southwest of the Bland-Tazewell County line, in woodland; Richlands, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 11 minutes 4 seconds N. and long. 81 degrees 17 minutes 53 seconds W.

A—0 to 6 inches; dark brown (10YR 3/3) gravelly fine sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; common very fine and fine roots; many fine tubular and many very fine vesicular pores; 25 percent subrounded sandstone gravel; strongly acid; clear smooth boundary.

E—6 to 14 inches; yellowish brown (10YR 5/6) very cobbly fine sandy loam; weak fine subangular blocky structure; friable, nonsticky, nonplastic; common fine and medium roots; many fine tubular and many very fine vesicular pores; 45 percent subrounded sandstone cobbles; very strongly acid; gradual wavy boundary.

Bt—14 to 61 inches; strong brown (7.5YR 5/6) extremely stony sandy clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine and coarse roots; many fine tubular and many very fine vesicular pores; common faint clay films on all faces of peds; 60 percent subrounded sandstone stones; very strongly acid.

Range in Characteristics

Solum thickness: 40 to more than 60 inches
Depth to bedrock: More than 60 inches
Reaction: Very strongly acid or strongly acid (in unlimed areas)
Rock fragments (content, type, size): 15 to 65 percent in the A and E horizons and 35 to 75 percent in the Bt horizon; combination of subrounded sandstone gravel, cobbles, and stones

A horizon:
Hue—7.5YR or 10YR
Value—2 to 4

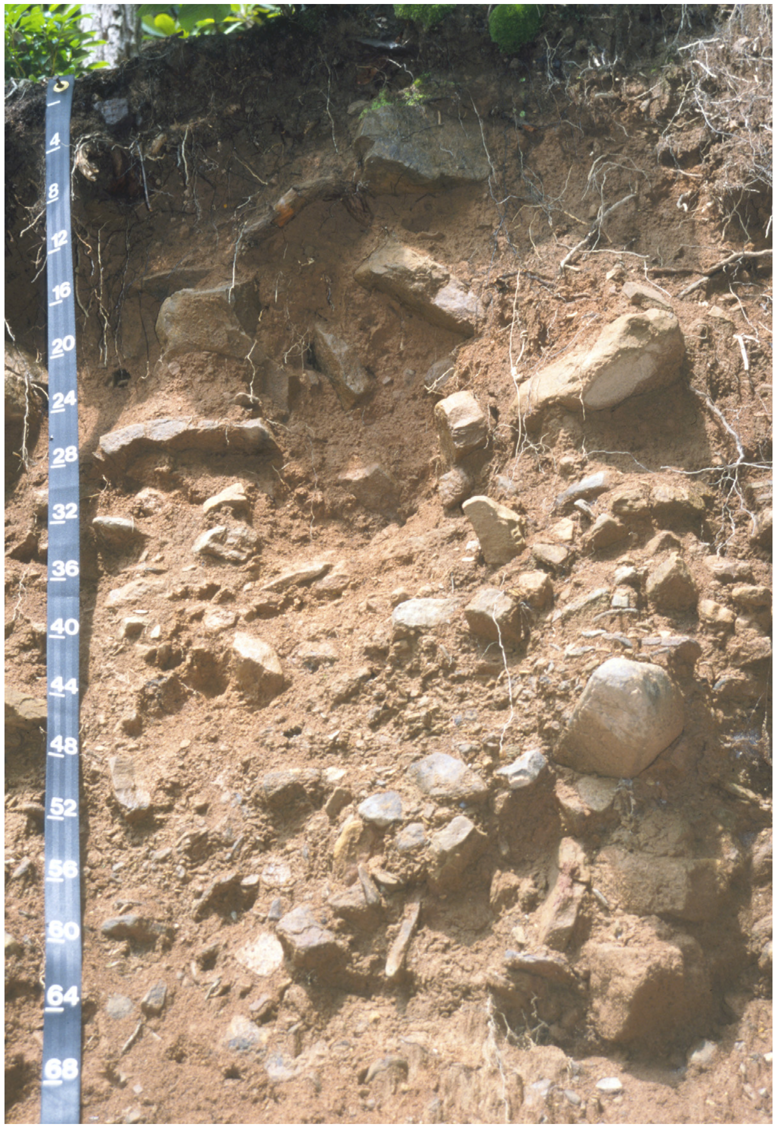


Figure 24.—Profile of Oriskany gravelly fine sandy loam. The content of rock fragments averages more than 35 percent in the subsoil. Depth is marked in inches.

Chroma—2 to 4
Texture (fine-earth fraction)—fine sandy loam

E horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture (fine-earth fraction)—fine sandy loam, sandy loam, or loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—clay loam, sandy clay loam, or loam

Philo Series

Physiographic province: Valley and Ridge
Landform: Flood plains along small creeks and major rivers
Parent material: Coarse-loamy alluvium derived from sandstone and shale
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 3 percent

Associated Soils

- Atkins soils, which are poorly drained and have a fine-loamy particle size; on landforms similar to those of the Philo soils
- Ogles soils, which are well drained and have a loamy-skeletal particle size; on landforms similar to those of the Philo soils
- Pope soils, which are well drained; on landforms similar to those of the Philo soils

Taxonomic Classification

Coarse-loamy, mixed, active, mesic Fluvaquentic Dystrudepts

Typical Pedon

Philo fine sandy loam, 0 to 3 percent slopes, occasionally flooded; in Tazewell County; about 1.5 miles west-northwest of Richlands, about 0.5 mile north of where Mudlick Creek passes under Highway US-460 in Doran, on a coal haul road in abandoned pasture; Richlands, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 5 minutes 56.30 seconds N. and long. 81 degrees 50 minutes 9.60 seconds W.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) fine sandy loam; moderate medium granular structure; friable, nonsticky, nonplastic; many fine and medium roots; common fine vesicular and tubular pores; strongly acid; clear smooth boundary.

Bw1—5 to 20 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; common fine and medium roots; common fine vesicular and tubular pores; few fine faint pale brown (10YR 6/3) iron depletions and yellowish brown (10YR 5/6) iron-manganese masses on faces of peds; strongly acid; gradual wavy boundary.

Bw2—20 to 44 inches; olive brown (2.5Y 4/4) fine sandy loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; few fine roots; common fine vesicular and tubular pores; common medium distinct irregular light brownish gray (10YR 6/2) iron depletions and irregular strong brown (7.5YR 5/6) masses of oxidized iron throughout; 10 percent rounded sandstone cobbles; strongly acid; clear smooth boundary.

C—44 to 60 inches; light olive brown (2.5Y 5/4) very cobbly sandy loam; single grain; very friable, nonsticky, nonplastic; common fine vesicular and tubular pores; few medium distinct irregular strong brown (7.5YR 5/6) masses of oxidized iron throughout and common medium distinct irregular light brownish gray (10YR 6/2) iron depletions throughout; 10 percent rounded sandstone gravel and 30 percent rounded sandstone cobbles; strongly acid.

Range in Characteristics

Solum thickness: 20 to 48 inches
Depth to bedrock: More than 60 inches
Reaction: Very strongly acid to moderately acid (in unlimed areas)
Rock fragments (content, type, size): 0 to 20 percent in the A and B horizons and 0 to 40 percent in the C horizon; dominantly rounded sandstone gravel and cobbles

A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 to 4
Texture (fine-earth fraction)—fine sandy loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture (fine-earth fraction)—fine sandy loam, loam, or sandy loam

C horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—0 to 6
Texture (fine-earth fraction)—sandy loam or fine sandy loam

Pope Series

Physiographic province: Valley and Ridge
Landform: Flood plains along small creeks and major rivers
Parent material: Coarse-loamy alluvium derived from sandstone, siltstone, and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Very deep
Slope range: 0 to 3 percent

Associated Soils

- Alonzville soils, which are well drained and have a fine-loamy particle size; on stream terraces
- Atkins soils, which are poorly drained and have a fine-loamy particle size; on landforms similar to those of the Pope soils
- Ogles soils, which have a loamy-skeletal particle size; on landforms similar to those of the Pope soils
- Philo soils, which are moderately well drained; on landforms similar to those of the Pope soils

Taxonomic Classification

Coarse-loamy, mixed, active, mesic Fluventic Dystrudepts

Typical Pedon

Pope fine sandy loam, 0 to 3 percent slopes, occasionally flooded; in Tazewell County; about 3.5 miles south of Bluefield, 100 feet south of Highway VA-61, about 800 feet west of the Tazewell-Bland County line, in a crop field; Cove Creek, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 11 minutes 3 seconds N. and long. 81 degrees 16 minutes 19 seconds W.

Ap—0 to 8 inches; dark yellowish brown (10YR 3/4) fine sandy loam; weak fine granular structure; very friable, nonsticky, nonplastic; many very fine and fine roots; many fine tubular and very fine vesicular pores; 5 percent rounded sandstone gravel; moderately acid; abrupt wavy boundary.

Bw1—8 to 15 inches; brown (7.5YR 4/4) gravelly sandy loam; weak fine subangular blocky structure; very friable, nonsticky, nonplastic; many very fine and fine roots;

many fine tubular and very fine vesicular pores; 15 percent rounded sandstone gravel; strongly acid; clear wavy boundary.

Bw2—15 to 27 inches; strong brown (7.5YR 4/6) sandy loam; weak medium subangular blocky structure; very friable, nonsticky, nonplastic; few very fine roots; many fine tubular and very fine vesicular pores; few organic stains on all faces of peds; 5 percent rounded sandstone gravel; strongly acid; clear wavy boundary.

Bw3—27 to 45 inches; strong brown (7.5YR 4/6) gravelly sandy loam; weak medium subangular blocky structure; very friable, nonsticky, nonplastic; few very fine roots; many fine tubular and very fine vesicular pores; 20 percent rounded sandstone gravel; very strongly acid; clear wavy boundary.

C—45 to 65 inches; strong brown (7.5YR 4/6) very gravelly loamy sand; single grain; loose, nonsticky, nonplastic; few very fine roots; many fine vesicular and tubular pores; 45 percent rounded sandstone gravel; very strongly acid.

Range in Characteristics

Solum thickness: 30 to 60 inches or more
Depth to bedrock: More than 60 inches
Reaction: Extremely acid to strongly acid (in unlimed areas)
Rock fragments (content, type, size): 0 to 30 percent above a depth of 40 inches and 0 to 75 percent below a depth of 40 inches; rounded sandstone gravel and cobbles

Ap horizon:
Hue—10YR
Value—3 or 4
Chroma—3 or 4
Texture (fine-earth fraction)—fine sandy loam

Bw horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—4 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

C horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture (fine-earth fraction)—loamy sand, sandy loam, or fine sandy loam

Rough Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Channery, loamy residuum weathered from shale and siltstone
Drainage class: Somewhat excessively drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very shallow
Slope range: 35 to 100 percent

Associated Soils

- Berks soils, which are moderately deep to shale bedrock; on landforms similar to those of the Rough soils
- Calvin and Culleoka soils, which are moderately deep to bedrock; on landforms similar to those of the Rough soils

- Weikert soils, which are shallow to bedrock; on landforms similar to those of the Rough soils
- Westmoreland soils, which are deep to bedrock and have a fine-loamy particle size; on landforms similar to those of the Rough soils

Taxonomic Classification

Loamy, mixed, active, acid, mesic Lithic Udorthents

Typical Pedon

Rough channery silt loam in an area of Weikert-Rough-Rock outcrop complex, 70 to 100 percent slopes; in Bland County; about 2.5 miles north of Bastian, about 0.7 mile northeast of the junction of Highways VA-614 and US-52, about 1.2 miles south of the junction of Highways 615 and US-52, in woodland; Bastian, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 11 minutes 10 seconds N. and long. 81 degrees 8 minutes 12 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.
A—1 to 3 inches; brown (10YR 4/3) channery silt loam; weak fine granular structure; friable, nonsticky, nonplastic; common very fine and fine and few coarse roots; many very fine interstitial pores; 25 percent angular siltstone channers; very strongly acid; abrupt smooth boundary.
Bw—3 to 6 inches; yellowish brown (10YR 5/4) very channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, nonplastic; common very fine and fine and few medium and coarse roots; many very fine interstitial pores; 45 percent angular siltstone channers; strongly acid; clear wavy boundary.
C—6 to 8 inches; yellowish brown (10YR 5/4) extremely channery silt loam; massive; friable, nonsticky, nonplastic; few very fine and fine roots; many very fine interstitial pores; 80 percent angular siltstone channers; strongly acid; abrupt wavy boundary.
R—8 inches; shale bedrock.

Range in Characteristics

Solum thickness: 0 to 8 inches
Depth to bedrock: Less than 10 inches; typically 4 to 9 inches
Reaction: Typically extremely acid or very strongly acid (in unlimed areas); strongly acid in some areas
Rock fragments (content, type): 15 to 60 percent in the A horizon, 35 to 75 percent in the Bw horizon, and 60 to 80 percent in the C horizon; shale, siltstone, and sandstone

A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 to 4
Texture (fine-earth fraction)—loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture (fine-earth fraction)—silt loam or loam

C horizon:
Hue—10YR
Value—4 to 6
Chroma—4 to 6
Texture (fine-earth fraction)—silt loam or loam

Shelocta Series

Physiographic province: Valley and Ridge
Landform: Base of slopes of hills and mountains
Parent material: Fine-loamy colluvium derived from sandstone and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 8 to 25 percent

Associated Soils

- Berks soils, which are moderately deep to shale bedrock and have a loamy-skeletal particle size; on hills
- Gilpin soils, which are moderately deep to shale bedrock; on hills
- Nicelytown soils, which are moderately well drained; on landforms similar to those of the Shelocta soils
- Oriskany soils, which have a loamy-skeletal particle size; on landforms similar to those of the Shelocta soils
- Weikert soils, which are shallow to shale bedrock and have a loamy-skeletal particle size; on hills

Taxonomic Classification

Fine-loamy, mixed, active, mesic Typic Hapludults

Typical Pedon

Shelocta silt loam, 8 to 15 percent slopes; in Smyth County; about 3.4 miles southwest of Cedar Springs, about 0.4 mile north-northeast of the intersection of Highways VA-612 and VA-614, about 1.6 miles west of the intersection of Highways VA-612 and VA-675, in a crop field; Cedar Springs, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 48 minutes 2 seconds N. and long. 81 degrees 20 minutes 33 seconds W.

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine and few medium roots; common medium pores; 5 percent angular shale channers; strongly acid; abrupt smooth boundary.

BA—8 to 15 inches; brown (7.5YR 5/4) silt loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; many fine roots; common medium pores; many medium prominent black (10YR 2/1) iron-manganese concretions on faces of peds; 5 percent angular shale channers; strongly acid; clear wavy boundary.

Bt1—15 to 34 inches; strong brown (7.5YR 4/6) silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common fine roots; common fine and common medium pores; common distinct clay films on all faces of peds; many medium prominent black (10YR 2/1) iron-manganese concretions on faces of peds; 5 percent angular shale channers; strongly acid; clear wavy boundary.

Bt2—34 to 46 inches; strong brown (7.5YR 5/6) silty clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; common fine pores; common distinct clay films on all faces of peds; few medium prominent black (10YR 2/1) iron-manganese concretions on faces of peds; 10 percent angular shale channers; strongly acid; abrupt wavy boundary.

Bt3—46 to 62 inches; strong brown (7.5YR 5/6) channery silty clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common fine pores; common distinct clay films on all faces of peds; few fine prominent black

(10YR 2/1) iron-manganese concretions on faces of peds; 18 percent angular shale channers; strongly acid.

Range in Characteristics

Solum thickness: 40 to 60 inches or more
Depth to bedrock: More than 40 inches
Reaction: Very strongly acid or strongly acid (in unlimed areas)
Rock fragments (content, type, size): 2 to 35 percent in the A and BA horizons and 5 to 35 percent in the Bt horizon; mostly shale channers

Ap horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture (fine-earth fraction)—silt loam

BA horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture (fine-earth fraction)—silt loam or loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—silt loam or silty clay loam

Slabtown Series

Physiographic province: Valley and Ridge
Landform: Base of slopes of hills and areas in valleys
Parent material: Local fine-loamy colluvium derived from limestone and shale over clayey residuum weathered from limestone
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 3 to 15 percent

Associated Soils

- Carbo soils, which are well drained, are moderately deep to limestone bedrock, and have a very-fine particle size; on hills
- Frederick soils, which are well drained, are very deep to limestone bedrock, and have a fine particle size; on hills
- Watahala soils, which are well drained, are very deep to cherty limestone bedrock, and have a fine-loamy over clayey particle size; on hills

Taxonomic Classification

Fine-loamy, mixed, semiactive, mesic Aquic Paleudalfs

Typical Pedon

Slabtown silt loam, 8 to 15 percent slopes; in Pulaski County; approximately 3 miles north of Pulaski, 150 yards northwest of the intersection of Highways VA-645 and US-11, about 1.1 miles southeast of the intersection of Highways VA-636 and VA-645,

in pasture; Pulaski, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 4 minutes 41 seconds N. and long. 80 degrees 45 minutes 10 seconds W.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable, slightly sticky, nonplastic; common very fine and fine roots; common very fine tubular pores; 10 percent subrounded chert gravel; neutral; clear wavy boundary.

E—9 to 18 inches; yellowish brown (10YR 5/4) silt loam; few fine faint irregular pale brown (10YR 6/3) mottles; weak very fine and fine subangular blocky structure; friable, slightly sticky, nonplastic; few very fine and fine roots; common very fine tubular pores; 5 percent subrounded chert gravel; slightly alkaline; clear smooth boundary.

BE—18 to 26 inches; yellowish brown (10YR 5/4) silt loam; moderate very fine and fine subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; many very fine tubular pores; few distinct discontinuous dark yellowish brown (10YR 4/4), pale brown (10YR 6/3), dark yellowish brown (10YR 4/4), and pale brown (10YR 6/3) silt coats on all faces of peds; common black iron-manganese masses; 12 percent subrounded chert gravel; slightly alkaline; clear smooth boundary.

Bt1—26 to 34 inches; yellowish brown (10YR 5/6) silt loam; moderate coarse prismatic structure parting to moderate very thick platy; friable, slightly sticky, slightly plastic; few very fine roots; many very fine tubular pores; few distinct discontinuous brown (7.5YR 4/4) clay films on all faces of peds; many fine distinct irregular extremely weakly cemented light gray (10YR 7/2) iron depletions with clear boundaries; 2 percent subrounded chert gravel; slightly alkaline; gradual smooth boundary.

Bt2—34 to 44 inches; strong brown (7.5YR 5/6) and light yellowish brown (10YR 6/4) gravelly silty clay loam; moderate coarse prismatic structure parting to moderate very thick platy; friable, slightly sticky, slightly plastic; few very fine roots; common very fine tubular pores; few distinct discontinuous brown (7.5YR 4/4) clay films on all faces of peds; many fine distinct irregular extremely weakly cemented light gray (10YR 7/2) iron depletions; 18 percent subrounded chert gravel; slightly alkaline; clear smooth boundary.

2Bt3—44 to 75 inches; yellowish brown (10YR 5/8) clay; common medium distinct irregular yellowish red (5YR 5/8) mottles; moderate very fine subangular blocky structure; friable, slightly sticky, moderately plastic; common very fine tubular pores; common prominent continuous strong brown (7.5YR 5/6) clay films on all faces of peds; many medium distinct light brownish gray (10YR 6/2) iron depletions; slightly alkaline.

Range in Characteristics

Solum thickness: More than 60 inches
Depth to bedrock: More than 60 inches
Reaction: Moderately acid to slightly alkaline (in unlimed areas)
Rock fragments (content, type): 2 to 35 percent in the A, E, and Bt horizons and 0 to 5 percent in the 2Bt horizon; chert or sandstone

Ap horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 8
Texture (fine-earth fraction)—silt loam

E and BE horizons:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 8
Texture (fine-earth fraction)—silt loam or loam

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—4 to 8
Texture (fine-earth fraction)—silt loam, loam, silty clay loam, or clay loam

2Bt horizon:
Hue—5YR to 10YR
Value—5 or 6
Chroma—4 to 8
Texture—silty clay loam, silty clay, or clay

Tumbling Series

Physiographic province: Valley and Ridge
Landform: Base of slopes of hills and mountains and areas in valleys; some areas have karst topopgraphy
Parent material: Clayey colluvium derived from sandstone and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 3 to 35 percent

Associated Soils

- Jefferson soils, which have a fine-loamy particle size; on landforms similar to those of the Tumbling soils
- Nicelytown soils, which have a fine-loamy particle size and are moderately well drained; on landforms similar to those of the Tumbling soils
- Oriskany soils, which have a loamy-skeletal particle size; on landforms similar to those of the Tumbling soils

Taxonomic Classification

Fine, kaolinitic, mesic Typic Paleudults

Typical Pedon

Tumbling loam, 3 to 8 percent slopes; in Smyth County; about 1.2 miles northwest of Cedar Springs, about 1.2 miles northwest of the junction of Highways VA-614 and VA-749, about 1.1 miles west of the junction of Highways VA-749 and VA-670, in a crop field; Cedar Springs, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 50 minutes 25 seconds N. and long. 81 degrees 18 minutes 29 seconds W.

Ap—0 to 9 inches; dark yellowish brown (10YR 4/4) loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine roots; few fine pores; 5 percent subrounded sandstone cobbles; strongly acid; abrupt smooth boundary.
Bt1—9 to 16 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; firm, slightly sticky, slightly plastic; common fine roots; common fine pores; few distinct continuous yellowish brown (10YR 5/6) clay films on all faces of peds; 5 percent subrounded sandstone cobbles; strongly acid; clear smooth boundary.
Bt2—16 to 34 inches; strong brown (7.5YR 5/6) clay loam; weak medium subangular blocky structure; firm, slightly sticky, slightly plastic; few fine roots; many fine pores; few faint continuous strong brown (7.5YR 5/6) clay films on all faces of peds; 5 percent subrounded sandstone cobbles; strongly acid; clear smooth boundary.

Bt3—34 to 44 inches; strong brown (7.5YR 5/6) clay loam; common fine distinct irregular red (2.5YR 5/8) mottles; weak medium subangular blocky structure; firm, slightly sticky, slightly plastic; few fine roots; many fine pores; few distinct continuous strong brown (7.5YR 5/6) clay films on all faces of peds; 5 percent subrounded sandstone cobbles; very strongly acid; clear smooth boundary.

Bt4—44 to 62 inches; yellowish red (5YR 5/6) clay loam; common fine distinct irregular yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm, slightly sticky, slightly plastic; few distinct continuous yellowish red (5YR 5/6) clay films on all faces of peds; 10 percent subrounded sandstone cobbles; very strongly acid.

Range in Characteristics

Solum thickness: More than 60 inches
Depth to bedrock: More than 60 inches
Reaction: Very strongly acid or strongly acid (in unlimed areas)
Rock fragments: 0 to 15 percent in the A horizon and 0 to 35 percent in the Bt horizon

Ap horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture (fine-earth fraction)—loam

Bt horizon:
Hue—2.5YR to 10YR
Value—4 or 5
Chroma—4 to 8
Texture (fine-earth fraction)—clay, sandy clay loam, or clay loam

Udorthents

Physiographic province: Valley and Ridge
Landform: Hills and valleys
Parent material: Fill material
Drainage class: Variable
Slowest saturated hydraulic conductivity: Variable
Depth class: Variable
Slope range: 0 to 25 percent

Associated Soils

- Berks soils, which are moderately deep to shale bedrock; on undisturbed hills
- Carbo soils, which are moderately deep to limestone bedrock; on undisturbed hills
- Frederick and Watahala soils, which are very deep to limestone bedrock; on undisturbed hills

Typical Pedon

The properties and characteristics of Udorthents vary to the extent that a typical pedon cannot be given. Udorthents formed when soils were disturbed by land leveling, excavation, or filling. They consist of loamy and clayey soil material and varying amounts of rock fragments. Depth to hard bedrock varies from a few inches to more than 5 feet. Areas range from slightly compacted to severely compacted. Unvegetated areas are susceptible to severe erosion.

Watahala Series

Physiographic province: Valley and Ridge
Landform: Hills
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 8 to 55 percent

Associated Soils

- Carbo soils, which are moderately deep to bedrock; on landforms similar to those of the Watahala soils
- Frederick soils, which have a fine particle size and have less chert in the soil than the Watahala soils; on similar landforms
- Slabtown soils, which are moderately well drained and have a fine-loamy particle size; on concave footslopes

Taxonomic Classification

Fine-loamy over clayey, siliceous over mixed, subactive, mesic Typic Paleudults

Typical Pedon

Watahala gravelly silt loam, 15 to 35 percent slopes, extremely stony (fig. 25); in Bland County; about 3.7 miles northeast of Nebo, about 1.2 miles south-southeast of the junction of Highways VA-42 and VA-610, about 1.2 miles south of the junction of Highways VA-622 and VA-42, in cut-over woodland; Nebo, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 58 minutes 13 seconds N. and long. 81 degrees 23 minutes 19 seconds W.

Ap—0 to 2 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; weak very fine and fine granular structure; friable, nonsticky, nonplastic; many very fine, fine, medium, and coarse roots; 25 percent angular chert gravel; very strongly acid; abrupt wavy boundary.

E—2 to 17 inches; light yellowish brown (10YR 6/4) gravelly silt loam; weak very fine subangular blocky structure; friable, slightly sticky, nonplastic; common very fine and fine and few medium and coarse roots; 20 percent angular chert gravel; strongly acid; gradual wavy boundary.

Bt1—17 to 25 inches; light yellowish brown (10YR 6/4) gravelly loam; weak fine and medium subangular blocky structure; friable, slightly sticky, nonplastic; few very fine and fine roots; few faint clay films on all faces of peds; 30 percent angular chert gravel; very strongly acid; clear wavy boundary.

Bt2—25 to 29 inches; strong brown (7.5YR 5/6) gravelly clay loam; common medium distinct yellowish red (5YR 5/8) mottles; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine and fine roots; common faint clay films on all faces of peds; 15 percent angular chert gravel; very strongly acid; abrupt wavy boundary.

2Bt3—29 to 62 inches; yellowish red (5YR 5/8) clay; few fine distinct brownish yellow (10YR 6/8) mottles; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; few very fine roots; common distinct clay films on all faces of peds; 5 percent angular chert gravel; very strongly acid.

Range in Characteristics

Solum thickness: More than 60 inches
Depth to bedrock: More than 60 inches

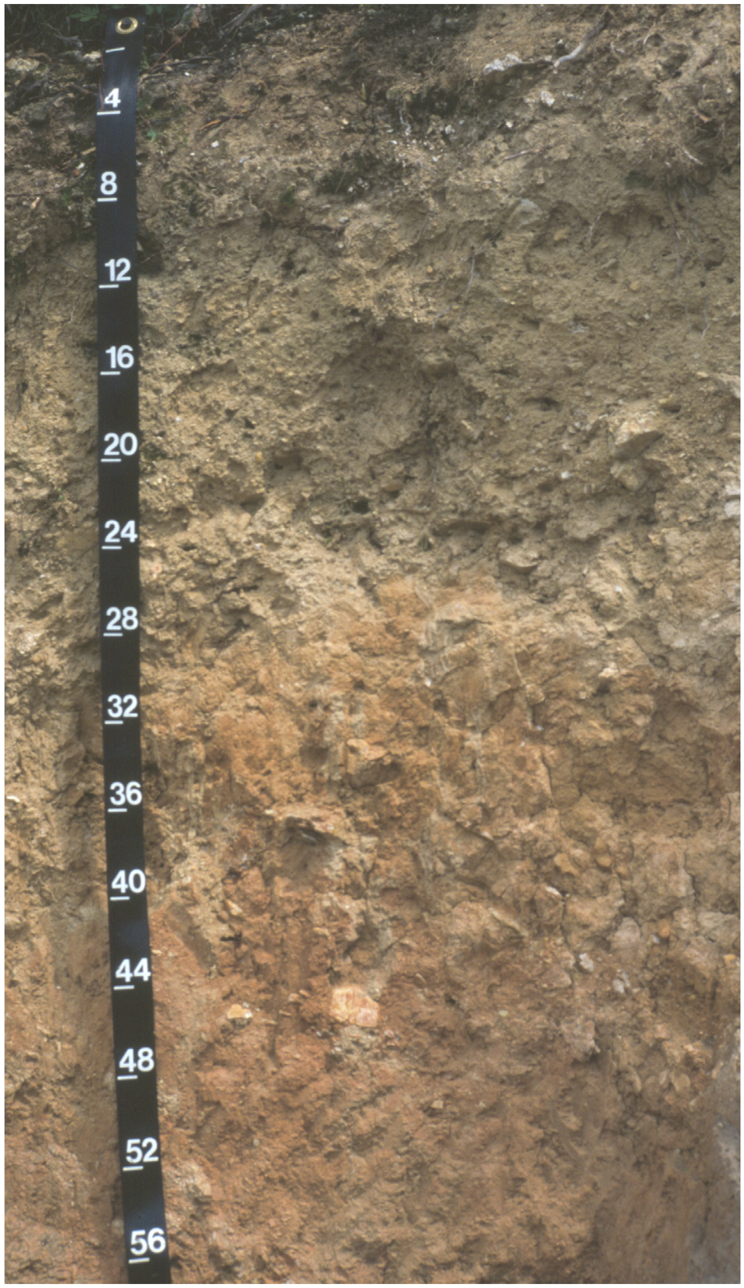


Figure 25.—Profile of Watahala gravelly silt loam. Yellowish red clay begins at a depth of 29 inches and extends to below a depth 60 inches. Depth is marked in inches.

Reaction: Extremely acid to strongly acid in the upper part of the solum (in unlimed areas) and very strongly or strongly acid in the 2Bt horizon

Rock fragments: 10 to 45 percent in individual horizons above the 2Bt horizon and 0 to 35 percent in the 2Bt horizon; the control section averages less than 35 percent; fragments are mostly chert but may be limestone and sandstone; mostly gravel or cobble in size

A horizon:
Hue—10YR
Value—3 or 4

Chroma—2 to 4
Texture (fine-earth fraction)—silt loam

E horizon:
Hue—10YR
Value—5 or 6
Chroma—2 to 4
Texture (fine-earth fraction)—silt loam, loam, fine sandy loam, or sandy loam

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—4 to 8
Texture (fine-earth fraction)—loam, clay loam, or silty clay loam

2Bt horizon:
Hue—5YR or 7.5YR
Value—4 to 6
Chroma—6 to 8
Texture (fine-earth fraction)—clay or silty clay

Weikert Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Channery, loamy residuum weathered from shale and siltstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Shallow
Slope range: 8 to 100 percent

Associated Soils

- Berks soils, which are moderately deep to bedrock; on landforms similar to those of the Weikert soils
- Nicelytown soils, which are very deep to bedrock, are moderately well drained, and have a fine-loamy particle size; on footslopes
- Rough soils, which are very shallow to shale bedrock; on landforms similar to those of the Weikert soils
- Shelocta soils, which are very deep to bedrock and have a fine-loamy particle size; on footslopes
- Tumbling soils, which are very deep to bedrock and have a fine particle size; on footslopes

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts

Typical Pedon

Weikert channery silt loam in an area of Berks-Weikert complex, 15 to 35 percent slopes; in Bland County; about 3.5 miles northwest of Mechanicsburg, about 0.3 mile west of the junction of Highways VA-631 and VA-612, about 1.0 mile southwest of the junction of Highways VA-612 and VA-606, in woodland; Mechanicsburg, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 10 minutes 46 seconds N. and long. 80 degrees 59 minutes 31 seconds W.

Oe—0 to 1 inch; moderately decomposed plant material.

A—1 to 3 inches; brown (10YR 4/3) channery silt loam; weak very fine granular structure; friable, slightly sticky, nonplastic; many very fine and fine and few medium and coarse roots; 25 percent angular shale channers; strongly acid; abrupt wavy boundary.

E—3 to 6 inches; yellowish brown (10YR 5/4) very channery silt loam; weak very fine subangular blocky structure; friable, slightly sticky, nonplastic; common very fine and fine and few medium roots; 40 percent angular shale channers; strongly acid; clear wavy boundary.

Bw—6 to 11 inches; yellowish brown (10YR 5/6) extremely channery silt loam; weak very fine subangular blocky structure; friable, slightly sticky, nonplastic; common very fine and fine and few coarse roots; 60 percent angular shale channers; very strongly acid; abrupt smooth boundary.

C—11 to 17 inches; yellowish brown (10YR 5/6) extremely channery silt loam; massive; friable, slightly sticky, nonplastic; 85 percent angular shale channers; very strongly acid; clear wavy boundary.

Cr—17 inches; shale bedrock.

Range in Characteristics

Solum thickness: 8 to 20 inches
Depth to bedrock: 10 to 20 inches
Reaction: Extremely acid to strongly acid (in unlimed areas)
Rock fragments: 10 to 50 percent in the upper part of the solum, 35 to 60 percent in the middle and lower parts of the solum, and 60 to 85 percent in the substratum

A horizon:
Hue—10YR
Value—3 or 4
Chroma—3 or 4
Texture (fine-earth fraction)—silt loam

E horizon:
Hue—10YR
Value—5
Chroma—4 to 8
Texture (fine-earth fraction)—silt loam or loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture (fine-earth fraction)—silt loam or loam

C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—silt loam or loam

Westmoreland Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Fine-loamy residuum weathered from limestone and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high

Depth class: Deep
Slope range: 15 to 35 percent

Associated Soils

- Berks soils, which are moderately deep to bedrock and have a loamy-skeletal particle size; on landforms similar to those of the Westmoreland soils
- Calvin soils, which are moderately deep to bedrock, have a loamy-skeletal particle size, and are redder than the Westmoreland soils; on similar landforms
- Culleoka soils, which are moderately deep to bedrock; on landforms similar to those of the Westmoreland soils
- Oriskany soils, which are very deep to bedrock and have many stones on the surface; on footslopes
- Tumbling soils, which are very deep to bedrock and have a fine particle size; on footslopes

Taxonomic Classification

Fine-loamy, mixed, active, mesic Ultic Hapludalfs

Typical Pedon

Westmoreland silt loam in an area of Westmoreland-Culleoka complex, 25 to 35 percent slopes (fig. 26); in Smyth County; about 6.25 miles northeast of Marion, about 1.1 miles south-southwest of the intersection of Highways VA-16 and VA-610, about 1.6 miles north of the intersection of Highways VA-16 and VA-348, in woodland; Chatham Hill, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 54 minutes 43 seconds N. and long. 81 degrees 31 minutes 52 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak very fine granular structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 10 percent angular shale channers; moderately acid; abrupt smooth boundary.

BA—8 to 16 inches; yellowish brown (10YR 5/6) silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; 10 percent angular shale channers; moderately acid; clear smooth boundary.

Bt—16 to 34 inches; yellowish brown (10YR 5/8) silty clay loam; moderate fine subangular blocky structure; friable, moderately sticky, slightly plastic; common very fine and fine roots; common very fine and fine interstitial pores; common distinct clay films on all faces of peds; 10 percent angular shale channers; moderately acid; clear wavy boundary.

BCt—34 to 39 inches; yellowish brown (10YR 5/8) channery silty clay loam; weak fine subangular blocky structure; friable, moderately sticky, slightly plastic; common very fine and fine interstitial pores; common distinct clay films on all faces of peds; 30 percent angular shale channers; moderately acid; clear wavy boundary.

C—39 to 47 inches; yellowish brown (10YR 5/8) extremely channery silt loam; massive; friable, slightly sticky, nonplastic; common very fine and fine interstitial pores; 80 percent angular shale channers; moderately acid; clear wavy boundary.

R—47 inches; shale bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: 40 to 60 inches or more
Reaction: Very strongly acid to moderately acid in the solum (in unlimed areas) and strongly acid or moderately acid in the substratum
Rock fragments (content, type, size): 2 to 25 percent in the A and BA horizons, 2 to 30 percent in the Bt and BCt horizons, and 45 to 90 percent in the C horizon; channers of mostly shale and, in some areas, limestone

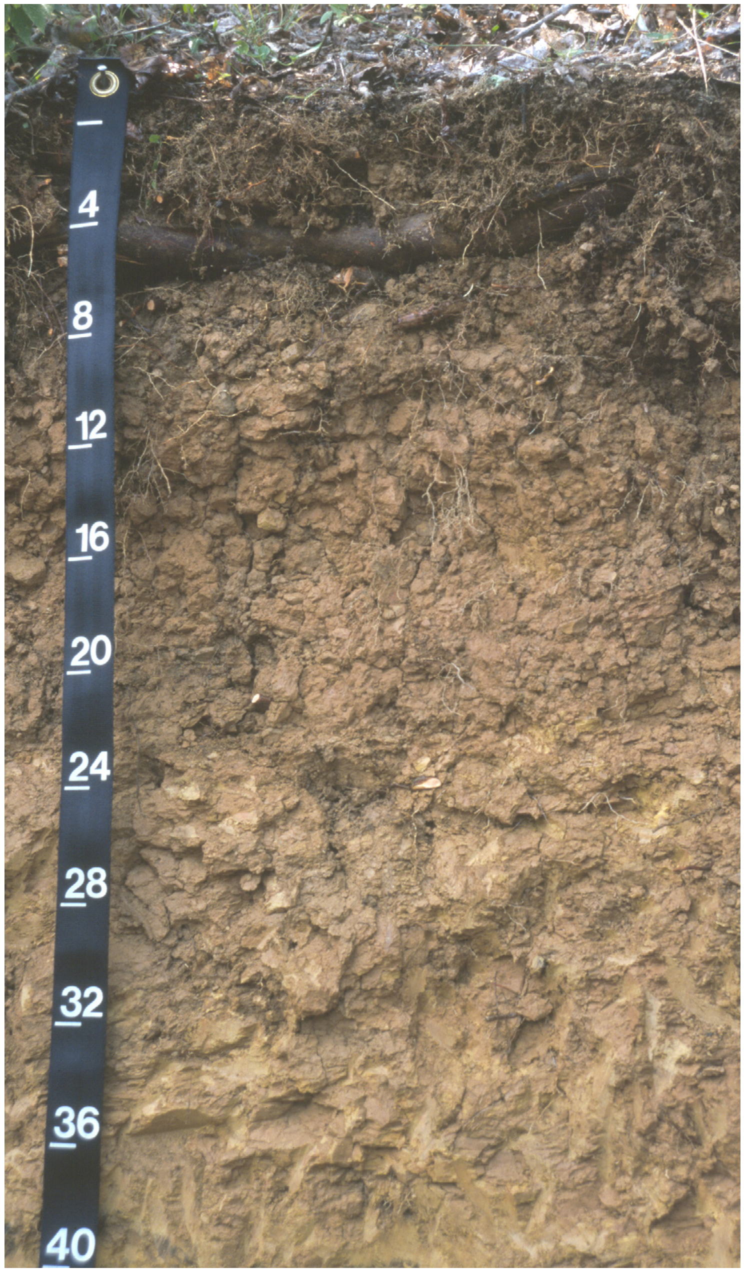


Figure 26.—Profile of Westmoreland silt loam. The argillic horizon occurs at a depth of 6 to 28 inches. The volume of weathered shale fragments increases as depth increases. Depth is marked in inches.

Ap horizon:

Hue—10YR
Value—3 or 4
Chroma—2 or 3
Texture (fine-earth fraction)—silt loam

BA horizon:

Hue—7.5YR or 10YR
Value—4 or 5

Chroma—4 to 6
Texture (fine-earth fraction)—silt loam or loam

Bt and BCt horizons:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 8
Texture (fine-earth fraction)—silt loam, loam, or silty clay loam

C horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 8
Texture (fine-earth fraction)—silt loam, loam, or silty clay loam

Formation of the Soils

In this section, the factors and processes that have affected the formation and morphology of the soils in Bland County are described. The processes of horizon differentiation are also discussed.

Factors of Soil Formation

Soil is formed by weathering and other processes that act upon parent material. The characteristics of the soil at any given point depend upon interaction of the five factors of soil formation. These factors are parent material, climate, plants and animals, relief, and time *(7)*.

Climate and plants and animals are the active forces of soil formation. In Bland County, they act on the parent material that has accumulated through the weathering of rocks and slowly change it into soil. Although all of the five factors affect the formation of every soil, the relative importance of each differs from place to place. In extreme cases one factor may dominate the formation of a soil and fix most of its properties. Generally, the combined action of the five factors determines the characteristics of each soil.

Figures 27 and 28 show the spatial relationship between soils, landform position, and parent material.

Parent Material

Parent material is the unconsolidated mass from which a soil forms. It is largely responsible for the chemical and mineralogical composition of the soil and the rate at which soil-forming processes take place. Parent materials in Bland County are residual, alluvial, and colluvial.

The principle types of residual parent material in the survey area include limestone, sandstone, shale (fig. 29), and siltstone. Soils that formed in residuum from limestone are in the valley portions of the survey area. They typically have a loam or silt loam surface layer and a clay or silty clay subsoil. Examples are Frederick, Carbo, and Watahala soils. Residuum from sandstone on the higher mountains in the county weathered to form the parent material of the loamy textured Bailegap, Lily, and Dekalb soils. These soils typically have (in the fine-earth fraction) a fine sandy loam or sandy loam surface layer and a loam, sandy clay loam, or clay loam subsoil. Examples of soils that formed from shale and siltstone, which are dominantly located on intermediate mountain ridges across the survey area, include Berks, Calvin, Gilpin, and Weikert soils. They typically have (in the fine-earth fraction) a silt loam surface layer and a silt loam or silty clay loam subsoil.

The alluvial parent materials in Bland County are of local origin and occur along the streams and their tributaries. Soils derived from alluvium have wide ranges in texture and development. Examples of such soils are Alonzville, Atkins, Ogles, Pope, and Philo soils.

Colluvial parent materials dominantly occur along the lower mountain side slopes, in coves, and on benches. Soils that formed in these areas primarily are moderately

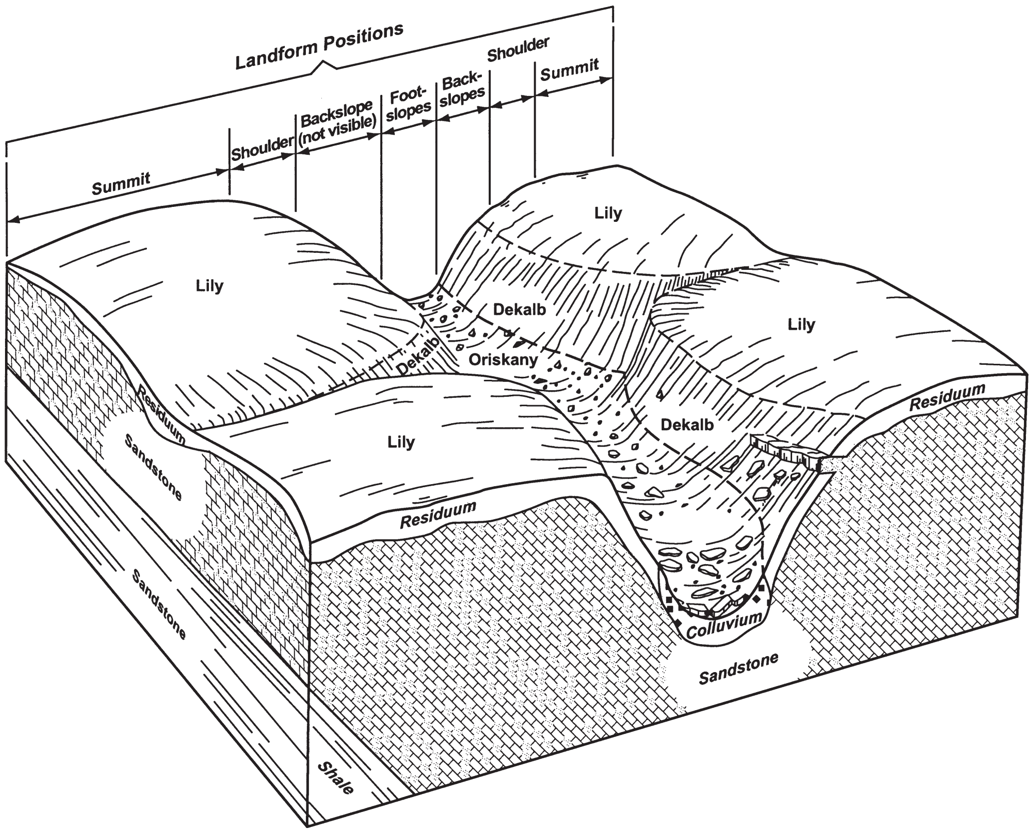


Figure 27.—Diagram of a sequence of landform positions in the mountainous areas of Bland County. The soils named on the land surface are shown in their natural relationship to each other and in their relationship to landform position.

coarse textured, medium textured, or moderately fine textured. Examples are Jefferson, Oriskany, Slabtown, and Tumbling soils.

Climate

As a genetic factor, climate affects the physical, chemical, and biological relationships in soils, principally through the influence of precipitation and temperature. Water dissolves minerals and organic residue through the surface layer and subsoil. Temperature determines the types of physical, chemical, and biological activities that take place and the speed at which they occur.

Because the precipitation in Bland County exceeds evapotranspiration, the soils have been leached. Much of the soluble material that originally was present or was released through weathering has been removed. In addition to leaching soluble materials, water that percolates through the soil moves clay from the surface layer to the subsoil. Except for soils that formed in recent alluvium or sand or on very steep slopes, the soils of the county typically contain more clay in the subsoil than in the surface layer.

Also influenced by climate is the formation of blocky structure in the subsoil of well developed soils. The development of peds (aggregates) in the subsoil is caused partly by changes in volume of the soil mass that are primarily the result of alternating periods of wetting and drying.

The climate is uniform throughout most of the survey area. However, the climate's affect on soil formation may be modified locally by the gradient and aspect of slopes.

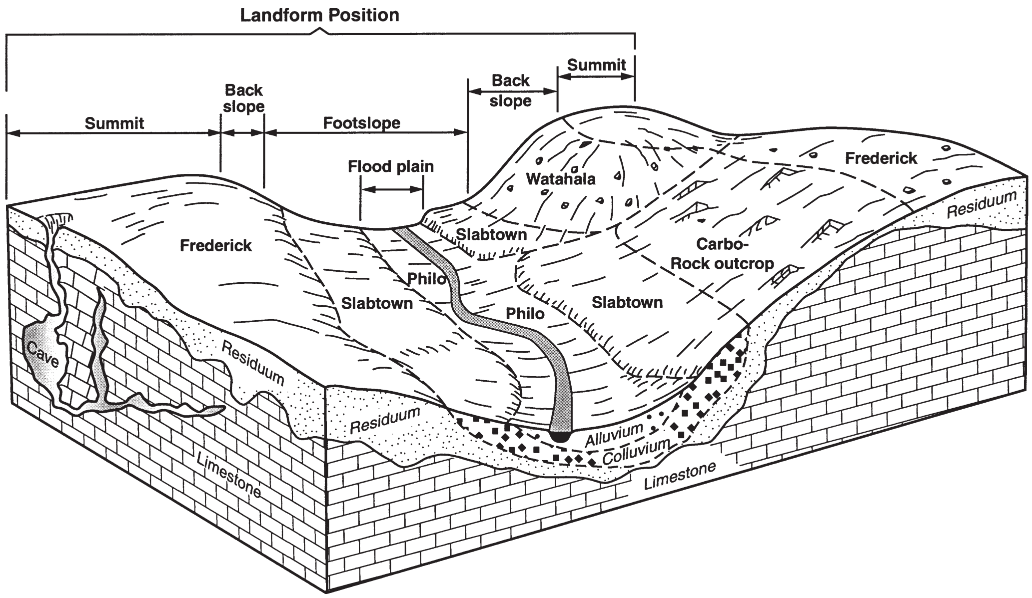


Figure 28.—Diagram of a sequence of landform positions in areas underlain with limestone in Bland County. The soils named on the land surface are shown in their natural relationship to each other and in their relationship to landform position.

Plant and Animal Life

Microorganisms, vegetation, animals, and humans are major factors in the formation of soils. Vegetation is generally responsible for the amount of organic matter in the soil and the color of the surface layer. Earthworms, cicadas, and burrowing animals help to keep the soil open and porous. Microorganisms decompose the vegetation and dead animal matter, thus releasing nutrients for plant food.

Before the survey area was settled, the native vegetation was the major living organism affecting soil development. The native vegetation consisted mainly of hardwoods. Oaks, hickories, chestnuts, maples, beech, and birch were the dominant trees in the original forest cover, along with scattered hemlock and eastern white pine. Most hardwoods use a large amount of the available calcium in the soil and other bases and constantly recycle them through leaf fall and decay. Coniferous trees recycle a smaller amount of bases than deciduous trees. Consequently, more bases have been leached from soils that developed under coniferous vegetation than those that developed under deciduous vegetation. The soils of the mountainous regions of the county that are underlain by acid parent rock have few remaining bases, even though they developed under a hardwood forest. This is mainly because of the low base content of the original parent material. Because the soils formed under forest vegetation, rapid decay of organic matter and constant recycling of plant nutrients have prevented organic matter from accumulating in large quantities. In addition, the present climate favors rapid decay of plant materials, oxidation of organic matter, and leaching of plant nutrients.

As farming developed in the survey area, humans became an important factor in the development of the soils. The clearing of the forests, cultivation, introduction of new plants, and changes in natural drainage have all affected soil development. The most important changes brought about by humans are the mixing of the upper layers of the soil to form a plow layer, the cultivation of steep, erodible slopes, and the liming and fertilizing that changes the content of plant nutrients, especially in the upper layers of the soils.

Figure 29.—An exposure of the Brallier Shale, the most extensive geologic formation in Bland County. Weikert and Berks soils are dominant on this formation.

Relief

The underlying formations, the geologic history of the general region, and the effects of dissection by rivers and streams largely determine the relief of an area. Relief affects the formation of soils by influencing the rate of surface runoff, the soil temperature, and the geologic erosion. It can alter the effects of climate acting on the parent material to the extent that several different kinds of soil may form from the same kind of parent material. Relief also affects the amount of radiant energy absorbed by the soils, which in turn affects the type of native vegetation.

Relief also affects drainage. Runoff from upland areas tends to accumulate in areas of nearly level flood plains, resulting in a high water table. Poorly drained Atkins and Maurertown soils are examples of soils in these areas.

The gently sloping to very steep soils generally are well drained or moderately well drained. Geologic erosion is slight, surface runoff is medium or rapid, and the translocation of bases and clay has typically occurred downward through the soil. On the steeper soils, however, surface runoff is very rapid, water infiltration and the translocation of clays and bases throughout the soil are minimized, and geologic erosion removes soil material almost as fast as it forms.

Time

As a factor of soil formation, time generally is related to the degree of development or degree of horizon differentiation within the soil. A soil that has little or no horizon development is considered a young soil, and one that has strongly developed horizons is considered an old or mature soil.

The oldest soils in the survey area are those that formed in residual material weathered from bedrock. In general, these soils are in the less sloping, relatively stable positions and formed in easily weatherable materials. These older soils have a

strong degree of horizon differentiation. Frederick soils are an example. On very steep slopes, geologic erosion removed soil material in a relatively short period and the soils generally have not been in place long enough to develop more than moderate horizon differentiation. Examples are Weikert and Rough soils. Soils that formed in recent alluvium have been in place only a relatively short time and show little or no development other than an accumulation of organic matter in the surface layer. They commonly are stratified and have an irregular distribution of organic matter. Examples are Pope and Ogles soils.

Morphology of the Soils

The interaction of soil-forming factors results in distinguishable layers, or horizons, in a soil profile. The soil profile extends from the surface of the soil down to materials that are little altered by the soil-forming processes. The five major horizons that occur in the soils in the survey area are the O, A, E, B, and C horizons.

The *O horizon* is a very dark, organic horizon that forms above the mineral soil. In Bland County, O horizons occur almost exclusively on forested soils. They result mainly from the decomposition of hardwood leaf litter and are quickly destroyed by such activities as land clearing and plowing.

The *A horizon* is a mineral surface layer which has been darkened by the accumulation of organic matter. Philo soils have a dark A horizon.

The *E horizon* is an eluvial horizon that has been leached of clay, iron, and aluminum. Typically, it is a light-colored layer composed of resistant materials such as sand- and silt-sized quartz. While this horizon does not occur in all soils, it is distinct in sandy or loamy textured forest soils. Bailegap and Oriskany soils typically have well expressed E horizons.

The *B horizon* is an illuvial horizon that has an accumulation of clay, iron, aluminum, and other compounds leached from the A and E horizons. In Bland County, soils that have layers of clay accumulation, or Bt horizons, are common in the limestone valley and on old river terraces. Frederick soils have well developed Bt horizons. On the steeper mountain side slopes, less developed layers, or Bw horizons, usually form. These horizons generally have weak blocky structure and are brighter in color than the overlying horizons. Berks and Lily soils have Bw horizons.

The *C horizon* is the parent material of the soil. It consists of material that has been modified by weathering but has been only slightly altered by the soil-forming processes. It generally lacks structure and contains few, if any, roots.

Many processes have been involved in the formation of soil horizons in the survey area. These include the accumulation of organic matter, the leaching of soluble salts, the reduction and transfer of iron, the formation and translocation of clay minerals, and the formation of soil structure. In most soils, these processes have been taking place for thousands of years.

Most of the well drained or moderately well drained soils on uplands have a yellowish brown to yellowish red B horizon. These colors are mainly caused by the presence of iron oxides. Zones of gray colors where iron has been reduced and transferred occur in the B horizons of moderately well drained soils. Reoxidized iron produces red, yellowish red, strong brown, or yellowish brown colors in areas that are oxygenated. Nicelytown soils exhibit this mottled pattern of color.

Somewhat poorly drained to very poorly drained soils commonly have layers of gray colors. These colors are the result of gleying, a process of intense reduction of iron during soil formation. Maurertown soils exhibit these colors.

The weathering of primary minerals to form silicate clay minerals, largely through hydrolysis, commonly occurs in the soils of Bland County. Through this process, different clay minerals such as kaolinite, vermiculite, and, to a lesser extent, smectite form. These clay minerals are translocated through the soil profile, often resulting in

heavy, clayey subsoils. Typically, in the soils of the survey area, no one type of clay mineral dominates. The soils are a mixture of clay minerals. The exception is Tumbling soils, which are dominated by kaolinite.

Processes of Horizon Differentiation

In Bland County, several processes are involved in the formation of soil horizons. These include the accumulation of organic matter, the leaching of soluble salts, the reduction and transfer of iron, the formation of soil structure, and the formation and translocation of clay minerals. These processes are continually taking place, generally at the same time throughout the soil profile. Such processes have been going on for thousands of years.

The accumulation and incorporation of organic matter takes place with the decomposition of plant residue. Organic matter darkens the surface layer and helps to form the A horizon. In many places much of the surface layer has been eroded away or has been mixed with materials from underlying layers through cultivation. Once lost, organic matter normally takes a long time to replace. In Bland County, the organic matter content of the surface layer ranges from low, as in Dekalb soils, to high, as in Atkins soils.

For soils to form distinct subsoil horizons, soluble salts must be leached before the translocation of clay minerals can occur. Among the factors that affect this leaching are the kind of salts originally present and the permeability of the soil profile.

Well drained and moderately well drained soils in the survey area have a red to yellowish brown subsoil. These colors are caused mainly by thin coatings of iron oxides on the soil particles, although in some soils the color is inherited from the materials in which they formed. In most soils in the survey area, the structure of the subsoil is weak or moderate subangular blocky.

The reduction and transfer of iron, called gleying, is associated mainly with the wetter, more poorly drained soils. Moderately well drained soils, such as Nicelytown, have yellowish brown to gray mottles, which indicate the segregation of iron. In poorly drained soils, such as Atkins and Maurertown, the subsoil and underlying material are grayish, which indicates reduction and transfer of iron by removal in solution.

References

(1) American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th ed.

(2) American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

(3) Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildl. Serv. FWS/OBS-79/31.

(4) Federal Register. July 13, 1994. Changes in hydric soils of the United States.

(5) Federal Register. 2002. Hydric soils of the United States.

(6) Hurt, G.W., P.M. Whited, and R.F. Pringle, eds. 2002. Field indicators of hydric soils in the United States. Ver. 5.0.

(7) Jenny, Hans. 1941. Factors of soil formation.

(8) National Research Council. 1995. Wetlands: Characteristics and boundaries.

(9) Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildl. Serv. and Del. Dep. of Natural Resourc. and Environ. Control, Wetl. Sec.

(10) United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Exp. Stn. Tech. Rep. Y-87-1.

(11) United States Department of Agriculture, National Agricultural Statistics Service. 2002. County summary highlights. (Available at http://www.nass.usda.gov/census/)

(12) United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. (Available at http://soils.usda.gov/technical/)

(13) United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook. Title 430-VI. (Available at http://soils.usda.gov/technical/)

(14) United States Department of Agriculture, Natural Resources Conservation Service. 1998. Keys to soil taxonomy. 8th ed. Soil Surv. Staff.

(15) United States Department of Agriculture, Natural Resources Conservation Service. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd ed. Soil Surv. Staff. U.S. Dep. Agric. Handb. 436.

(16) United States Department of Agriculture, Natural Resources Conservation Service. 2002. Field book for describing and sampling soils. Ver. 2.0. P.J. Schoeneberger, D.A. Wysocki, E.C. Benham, and W.D. Broderson, eds.

(17) United States Department of Agriculture, Soil Conservation Service. 1954. Soil survey of Bland County, Virginia.

(18) United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Dep. Agric. Handb. 210.

(19) United States Department of Agriculture, Soil Conservation Service. 1993. Soil survey manual. Soil Surv. Staff. U.S. Dep. Agric. Handb. 18. (Available at http://soils.usda.gov/technical/)

(20) United States Department of Commerce, Census Bureau. 2000. Census 2000 summary file 1. (Available at http://factfinder.census.gov)

(21) Virginia Polytechnic Institute and State University. 1994. VALUES—Virginia Agronomic Land Use Evaluation System. *In* Soil Test Recommendations for Virginia (S.D. Donohue, ed.). Va. Coop. Ext.

Glossary

ABC soil. A soil having an A, a B, and a C horizon.
AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.
Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.
Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.
Alluvial fan. A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.
Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.
Alpha,alpha-dipyridyl. A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.
Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.
Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.
Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.
Aspect. The direction toward which a slope faces. Also called slope aspect.
Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.
Backswamp. A flood-plain landform. An extensive, marshy or swampy, depressed area of flood plains between natural levees and valley sides or terraces.
Basal area. The area of a cross section of a tree, generally referring to the section at

breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology). A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane. A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. An informal term loosely applied to various portions of a flood plain.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of

parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Cement rock. Shaly limestone used in the manufacture of cement.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. See Redoximorphic features.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A dense, compact, slowly permeable subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Concretions. See Redoximorphic features.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Colluvium. Unconsolidated, unsorted earth material that has been transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse-grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion (geomorphology). A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations). Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Crusts, soil. Relatively thin, somewhat continuous layers of the soil surface that often restrict water movement, air entry, and seedling emergence from the soil. They generally are less than 2 inches thick and are massive.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep soils, 20 to 40 inches; shallow soils, 10 to 20 inches; and very shallow soils, less than 10 inches.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw. A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Earthy fill. See Mine spoil.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion pavement. A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface. A land surface shaped by the action of erosion, especially by running water.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan (alluvial). A generic term for constructional landforms that are built of stratified alluvium with or without debris-flow deposits and that occur on the pediment slope, downslope from their source of alluvium.

Fan apron. A sheet-like mantle of relatively young alluvium or colluvium covering part of an older fan piedmont surface. It buries a soil that can be traced to the edge of the fan apron where the soil emerges as the land surface, or relict soil. No buried soils should occur within a fan-apron mantle.

Fan remnant. A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flooding frequency class. Flooding frequency class indicates the number of times flooding can occur over a certain period of time. The classes of flooding are defined as follows:

None.—There is no reasonable possibility of flooding. There is a near 0 percent chance of flooding in any year, or flooding occurs less than 1 time in 500 years.

Very rare.—Flooding is very unlikely but possible under extremely unusual weather conditions. There is a less than 1 percent chance of flooding in any year, or flooding occurs less than 1 time in 100 years but at least 1 time in 500 years.

Rare.—Flooding unlikely but possible under unusual weather conditions. There is a 1 to 5 percent chance of flooding in any year, or flooding occurs nearly 1 to 5 times in 100 years.

Occasional.—Flooding is expected infrequently under usual weather conditions. There is a 5 to 50 percent chance of flooding in any year, or flooding occurs more than 5 times to 50 times in 100 years.

Frequent.—Flooding is likely to occur often under usual weather conditions. There is a more than a 50 percent chance of flooding in any year but a less than a 50 percent chance of flooding in all months in any year, or flooding occurs more than 50 times in 100 years.

Very frequent.—Flooding is likely to occur very often under usual weather conditions. There is a more than a 50 percent chance of flooding in all months of any year.

Flood plain. The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms. A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay. A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step. An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. It may occur individually or in a series of steps.

Fluvial. Of or pertaining to rivers or streams; produced by stream or river action.

Foothills. A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope. The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan

appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology). A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope. A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or

lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net

irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. See Redoximorphic features.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Karst (topography). A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

Landslide. A general, encompassing term for most types of mass movement

landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Mass movement. A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses. See Redoximorphic features.

Meander belt. The zone within which migration of a meandering channel occurs; the flood plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar. A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll. One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine spoil. An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. A kind of map unit that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high

base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain. A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Mudstone. A blocky or massive, fine-grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. See Redoximorphic features.

Nose slope (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Paleoterrace. An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment. A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology). A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower-lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse-grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings. See Redoximorphic features.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil was adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes,

under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations. See Redoximorphic features.

Redoximorphic depletions. See Redoximorphic features.

Redoximorphic features. Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features. The redoximorphic features are defined as follows:

1. *Redoximorphic concentrations.*—These are zones of apparent accumulation of iron-manganese oxides and include nodules and concretions, masses, and pore linings. *Nodules and concretions* are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure. *Masses* are noncemented concentrations of substances within the soil matrix. *Pore linings* are zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.

2. *Redoximorphic depletions.*—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both

iron-manganese oxides and clay have been stripped out. They include iron depletions and clay depletions. *Iron depletions* are zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix. *Clay depletions* are zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).

3. *Reduced matrix.*—This is a soil matrix that has low chroma in situ but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Regolith. All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill. A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser. The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Saturated hydraulic conductivity (K_{sat}). The amount of water that would move vertically through a unit area of saturated soil in unit time under unit hydraulic gradient. Terms describing saturated hydraulic conductivity, measured in inches per hour (*micrometers per second or μm/sec*), are as follows:

Very low	0.0 to 0.001417 in/hr *(0.0 to 0.01 μm/sec)*
Low	0.001417 to 0.01417 in/hr *(0.01 to 0.1 μm/sec)*
Moderately low	0.01417 to 0.1417 in/hr *(0.1 to 1.0 μm/sec)*
Moderately high	0.1417 to 1.417 in/hr *(1.0 to 10 μm/sec)*
High	1.417 to 14.17 in/hr *(10 to 100 μm/sec)*
Very high	more than 14.17 in/hr *(more than 100 μm/sec)*

To convert μm/sec to in/hr multiply μm/sec by 0.1417; to convert in/hr to μm/sec multiply by 7.0572.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock. A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope (geomorphology). A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is dominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt is dominant over clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a

slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for slopes are as follows:

Nearly level	0 to 3 percent
Gently sloping	3 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 35 percent
Very steep	35 percent and higher

Slope alluvium. Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Strath terrace. A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, that originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus. Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Terrace (conservation). An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology). A step-like surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion. Terraces susceptible to flooding are subdivided as into a *low stream terrace*, which is susceptible to flooding, and a *high stream terrace*, which is not susceptible to flooding.

Terracettes. Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam,*

silty clay loam, sandy clay, silty clay, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread. The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Upland. An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill. The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth’s surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded. Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1A.—Temperature and Precipitation

(Recorded in the period 1971-2000 at Staffordsville, Virginia)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temp. higher than--	2 years in 10 will have-- Minimum temp. lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snow-fall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January--	42.7	23.1	32.9	66	-6	41	3.16	1.53	4.78	6	6.5
February-	47.0	25.7	36.4	72	1	69	2.87	1.85	3.86	6	6.1
March----	56.6	32.9	44.8	79	9	205	3.54	2.25	4.68	7	3.4
April----	65.9	39.9	52.9	84	20	385	3.47	1.95	4.92	7	1.0
May------	73.6	47.8	60.7	87	28	641	4.16	2.47	5.81	8	0.0
June-----	80.2	55.9	68.1	91	39	830	3.93	2.12	5.51	6	0.0
July-----	83.9	60.4	72.1	94	46	995	3.91	2.55	5.17	8	0.0
August---	82.7	59.0	70.9	94	45	956	3.24	1.91	4.50	6	0.0
September	76.7	52.9	64.8	90	33	742	3.19	1.37	4.90	6	0.0
October--	67.4	40.5	54.0	83	21	434	2.76	1.23	4.25	4	0.0
November-	56.7	32.7	44.7	76	12	193	2.82	1.73	3.79	5	0.8
December-	46.9	26.4	36.6	69	1	79	2.57	1.30	3.86	5	3.8
Yearly:											
Average	65.0	41.4	53.2	---	---	---	---	---	---	---	---
Extreme	100	-18	---	95	-9	---	---	---	---	---	---
Total--	---	---	---	---	---	5,571	39.61	34.19	44.48	74	21.6

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 1B.—Temperature and Precipitation

(Recorded in the period 1971-2000 at Burkes Garden, Virginia)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temp. higher than--	2 years in 10 will have-- Minimum temp. lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snow-fall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January--	39.3	20.2	29.8	62	-13	27	3.88	2.21	5.38	8	15.1
February-	42.7	22.1	32.4	67	-6	41	3.41	2.07	4.76	7	13.8
March----	51.5	29.5	40.5	74	6	130	4.11	2.51	5.77	8	8.1
April----	60.7	35.6	48.1	79	15	265	3.60	2.15	5.06	8	3.0
May------	68.6	44.5	56.6	81	24	508	4.89	3.35	6.35	10	0.1
June-----	75.2	52.6	63.9	85	34	713	4.26	2.64	5.71	8	0.0
July-----	78.8	56.6	67.7	88	40	847	4.38	2.68	6.05	8	0.0
August---	77.6	54.6	66.1	87	39	810	4.04	2.57	5.35	7	0.0
September	72.0	48.3	60.1	85	28	599	3.47	1.70	5.26	6	0.0
October--	62.4	36.6	49.5	77	17	305	3.11	1.43	4.71	5	0.4
November-	52.0	29.6	40.8	72	7	126	3.15	1.94	4.26	7	2.9
December-	43.0	23.0	33.0	65	-5	50	3.41	1.96	4.74	7	9.1
Yearly:											
Average	60.3	37.8	49.0	---	---	---	---	---	---	---	---
Extreme	94	-26	---	89	-16	---	---	---	---	---	---
Total--	---	---	---	---	---	4,421	45.71	39.41	51.52	89	52.5

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2A.—Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at Staffordsville, Virginia)

Probability	Temperature		
	24 ^{o}F or lower	28 ^{o}F or lower	32 ^{o}F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 14	May 7	May 15
2 years in 10 later than--	Apr. 9	May 1	May 11
5 years in 10 later than--	Mar. 31	Apr. 18	May 2
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 17	Oct. 2	Sept. 27
2 years in 10 earlier than--	Oct. 23	Oct. 7	Oct. 1
5 years in 10 earlier than-	Nov. 3	Oct. 17	Oct. 8

Table 2B.—Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at Burkes Garden, Virginia)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	May 3	May 14	June 3
2 years in 10 later than--	Apr. 27	May 10	May 27
5 years in 10 later than--	Apr. 15	May 3	May 16
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 4	Sept. 24	Sept. 10
2 years in 10 earlier than--	Oct. 8	Sept. 28	Sept. 15
5 years in 10 earlier than-	Oct. 17	Oct. 6	Sept. 26

Table 3A.—Growing Season

(Recorded in the period 1971-2000 at Staffordsville, Virginia)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	195	161	142
8 years in 10	203	169	148
5 years in 10	216	183	158
2 years in 10	230	198	169
1 year in 10	237	206	175

Table 3B.—Growing Season

(Recorded in the period 1971-2000 at Burkes Garden, Virginia)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	163	140	109
8 years in 10	170	145	118
5 years in 10	184	156	133
2 years in 10	198	167	148
1 year in 10	205	172	156

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
1B	Alonzville silt loam, 3 to 8 percent slopes, rarely flooded	940	0.6
2A	Atkins fine sandy loam, 0 to 3 percent slopes, frequently flooded	2,614	1.6
3D	Bailegap fine sandy loam, 15 to 35 percent slopes, very stony	3,031	1.9
4E	Bailegap-Lily-Dekalb complex, 35 to 70 percent slopes, very stony	6,477	4.1
5C	Berks-Weikert complex, 8 to 15 percent slopes	179	0.1
5D	Berks-Weikert complex, 15 to 35 percent slopes	8,387	5.3
5E	Berks-Weikert complex, 35 to 70 percent slopes	17,823	11.2
6D	Bland silty clay loam, 15 to 25 percent slopes	265	0.2
6E	Bland silty clay loam, 25 to 35 percent slopes	208	0.1
7D	Brushy extremely gravelly loam, 8 to 35 percent slopes, very stony	1,903	1.2
7E	Brushy extremely gravelly loam, 35 to 55 percent slopes, very stony	2,779	1.8
8D	Calvin channery silt loam, 15 to 35 percent slopes	584	0.4
8E	Calvin channery silt loam, 35 to 70 percent slopes	754	0.5
9D	Calvin channery silt loam, 15 to 35 percent slopes, very stony	322	0.2
10E	Calvin-Rough complex, 35 to 70 percent slopes, very stony	1,339	0.8
11D	Carbo-Rock outcrop complex, 8 to 35 percent slopes, eroded	1,923	1.2
11E	Carbo-Rock outcrop complex, 35 to 55 percent slopes, eroded	2,222	1.4
12D	Carbo-Rock outcrop complex, karst, 8 to 35 percent slopes, eroded	483	0.3
13F	Culleoka-Berks complex, 35 to 70 percent slopes	2,263	1.4
14D	Dekalb channery sandy loam, 8 to 35 percent slopes, extremely stony	1,698	1.1
14E	Dekalb channery sandy loam, 35 to 55 percent slopes, extremely stony	6,522	4.1
15D	Dekalb-Rock outcrop complex, 8 to 35 percent slopes, extremely stony	1,505	0.9
15F	Dekalb-Rock outcrop complex, 35 to 80 percent slopes, extremely stony	3,673	2.3
16C	Frederick silt loam, 8 to 15 percent slopes	775	0.5
16D	Frederick silt loam, 15 to 25 percent slopes	755	0.5
17C	Frederick gravelly silt loam, 8 to 15 percent slopes	4,815	3.0
17D	Frederick gravelly silt loam, 15 to 25 percent slopes	6,867	4.3
17E	Frederick gravelly silt loam, 25 to 35 percent slopes	3,871	2.4
18C	Frederick and Watahala soils, karst, 8 to 15 percent slopes	442	0.3
18D	Frederick and Watahala soils, karst, 15 to 25 percent slopes	539	0.3
19C	Gilpin silt loam, 8 to 15 percent slopes	445	0.3
19D	Gilpin silt loam, 15 to 25 percent slopes	387	0.2
20C	Jefferson cobbly loam, 8 to 15 percent slopes	1,187	0.7
20D	Jefferson cobbly loam, 15 to 25 percent slopes	295	0.2
21C	Lily sandy loam, 8 to 15 percent slopes, very stony	567	0.4
21D	Lily sandy loam, 15 to 35 percent slopes, very stony	1,921	1.2
21E	Lily sandy loam, 35 to 55 percent slopes, very stony	802	0.5
22A	Maurertown silt loam, 0 to 3 percent slopes, rarely flooded	880	0.6
23B	Nicelytown silt loam, 3 to 8 percent slopes	3,779	2.4
23C	Nicelytown silt loam, 8 to 15 percent slopes	2,010	1.3
24B	Ogles very stony loam, 0 to 5 percent slopes, frequently flooded	139	*
25A	Ogles-Pope-Philo complex, 0 to 3 percent slopes, occasionally flooded	2,150	1.4
26C	Oriskany gravelly fine sandy loam, 8 to 15 percent slopes, extremely stony	2,747	1.7
26D	Oriskany gravelly fine sandy loam, 15 to 35 percent slopes, extremely stony	12,781	8.0
27E	Oriskany gravelly fine sandy loam, 15 to 55 percent slopes, very rubbly	2,183	1.4
28A	Philo fine sandy loam, 0 to 3 percent slopes, occasionally flooded	1,277	0.8
29A	Pope fine sandy loam, 0 to 3 percent slopes, occasionally flooded	1,538	1.0
30	Quarries, limestone	40	*
31F	Rock outcrop-Beech Grove-Benthole complex, 25 to 100 percent slopes	348	0.2
32C	Shelocta silt loam, 8 to 15 percent slopes	1,351	0.9
32D	Shelocta silt loam, 15 to 25 percent slopes	488	0.3
33B	Slabtown silt loam, 3 to 8 percent slopes	1,253	0.8
33C	Slabtown silt loam, 8 to 15 percent slopes	3,843	2.4
34B	Tumbling loam, 3 to 8 percent slopes	259	0.2
34C	Tumbling loam, 8 to 15 percent slopes	1,368	0.9
34D	Tumbling loam, 15 to 25 percent slopes	266	0.2
35C	Tumbling loam, karst, 8 to 15 percent slopes	395	0.2
35D	Tumbling loam, karst, 15 to 25 percent slopes	280	0.2

See footnote at end of table.

Table 4.—Acreage and Proportionate Extent of the Soils—Continued

Map symbol	Soil name	Acres	Percent
36C	Tumbling loam, 8 to 15 percent slopes, very stony	1,858	1.2
36D	Tumbling loam, 15 to 35 percent slopes, very stony	5,623	3.5
37	Udorthents-Urban land complex, 0 to 25 percent slopes	1,090	0.7
38C	Watahala gravelly silt loam, 8 to 15 percent slopes	689	0.4
38D	Watahala gravelly silt loam, 15 to 25 percent slopes	2,379	1.5
38E	Watahala gravelly silt loam, 25 to 35 percent slopes	1,073	0.7
38F	Watahala gravelly silt loam, 35 to 55 percent slopes	219	0.1
39C	Watahala gravelly silt loam, 8 to 15 percent slopes, extremely stony	465	0.3
39D	Watahala gravelly silt loam, 15 to 35 percent slopes, extremely stony	4,614	2.9
39E	Watahala gravelly silt loam, 35 to 55 percent slopes, extremely stony	4,270	2.7
40F	Weikert-Rough-Rock outcrop complex, 70 to 100 percent slopes	343	0.2
41D	Westmoreland-Culleoka complex, 15 to 25 percent slopes	1,318	0.8
41E	Westmoreland-Culleoka complex, 25 to 35 percent slopes	3,287	2.1
W	Water	635	0.4
	Total	158,800	100.0

* Less than 0.1 percent.

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Land capability	Virginia soil management group	Alfalfa hay	Corn	Corn silage	Grass-legume hay	Pasture
			Tons	Bu	Tons	Tons	AUM
1B:							
Alonzville-----	2e	L	6.0	130	20.0	4.0	10.5
2A:							
Atkins---------	6w	NN	---	---	---	---	9.0
3D:							
Bailegap-------	7s	GG	---	---	---	---	---
4E:							
Bailegap-------	7e	GG	---	---	---	---	---
Lily-----------	7e	U	---	---	---	---	---
Dekalb---------	7e	FF	---	---	---	---	---
5C:							
Berks----------	3e	JJ	---	60	9.0	2.6	5.0
Weikert--------	6s	JJ	---	55	8.0	2.2	4.0
5D:							
Berks----------	6e	JJ	---	---	---	---	4.0
Weikert--------	6e	JJ	---	---	---	---	3.0
5E:							
Berks----------	7e	JJ	---	---	---	---	---
Weikert--------	7e	JJ	---	---	---	---	---
6D:							
Bland----------	4e	Y	---	80	12.0	2.8	4.0
6E:							
Bland----------	6e	Y	---	---	---	---	3.0
7D:							
Brushy---------	7s	JJ	---	---	---	---	---
7E:							
Brushy---------	7e	JJ	---	---	---	---	---
8D:							
Calvin---------	6e	JJ	---	---	---	---	5.5
8E:							
Calvin---------	7e	JJ	---	---	---	---	---
9D:							
Calvin---------	7s	JJ	---	---	---	---	---

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia soil management group	Alfalfa hay	Corn	Corn silage	Grass-legume hay	Pasture
			Tons	Bu	Tons	Tons	AUM
10E:							
Calvin----------	7e	JJ	---	---	---	---	---
Rough----------	7e	JJ	---	---	---	---	---
11D:							
Carbo----------	7s	Y	---	---	---	---	---
Rock outcrop---	8s	---	---	---	---	---	---
11E:							
Carbo----------	7s	Y	---	---	---	---	---
Rock outcrop---	8s	---	---	---	---	---	---
12D:							
Carbo----------	7s	Y	---	---	---	---	---
Rock outcrop---	8s	---	---	---	---	---	---
13F:							
Culleoka-------	7e	U	---	---	---	---	---
Berks----------	7e	JJ	---	---	---	---	---
14D:							
Dekalb---------	7s	FF	---	---	---	---	---
14E:							
Dekalb---------	7e	FF	---	---	---	---	---
15D:							
Dekalb---------	7s	FF	---	---	---	---	---
Rock outcrop---	8s	---	---	---	---	---	---
15F:							
Dekalb---------	7s	FF	---	---	---	---	---
Rock outcrop---	8s	---	---	---	---	---	---
16C:							
Frederick------	3e	M	5.3	114	17.0	3.5	8.0
16D:							
Frederick------	4e	M	4.8	104	16.0	3.2	8.0
17C:							
Frederick------	3e	M	4.8	103	15.0	3.2	8.0
17D:							
Frederick------	4e	M	4.3	94	14.0	2.9	8.0
17E:							
Frederick------	6e	M	---	---	---	---	7.0
18C:							
Frederick------	3e	M	4.8	---	---	3.2	8.0
Watahala-------	3e	M	4.8	---	---	3.2	7.5

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia soil management group	Alfalfa hay	Corn	Corn silage	Grass-legume hay	Pasture
			Tons	Bu	Tons	Tons	AUM
18D:							
Frederick------	4e	M	4.3	---	---	2.9	8.0
Watahala-------	4e	M	4.3	---	---	2.9	7.0
19C:							
Gilpin---------	3e	U	3.5	97	15.0	3.1	5.0
19D:							
Gilpin---------	4e	U	3.2	88	13.0	2.8	5.0
20C:							
Jefferson------	3e	L	4.1	97	14.0	3.0	8.0
20D:							
Jefferson------	4e	L	3.7	88	13.0	2.7	6.5
21C:							
Lily-----------	6s	U	---	---	---	---	6.0
21D:							
Lily-----------	7s	U	---	---	---	---	---
21E:							
Lily-----------	7e	U	---	---	---	---	---
22A:							
Maurertown-----	4w	NN	---	65	10.0	---	6.5
23B:							
Nicelytown-----	2e	G	5.5	140	21.0	4.5	9.0
23C:							
Nicelytown-----	3e	G	4.8	123	18.0	4.0	8.5
24B:							
Ogles----------	6s	CC	---	---	---	---	4.0
25A:							
Ogles----------	6s	CC	---	---	---	---	4.0
Pope-----------	1	A	6.0	160	24.0	4.5	8.0
Philo----------	2w	H	---	140	25.0	3.0	7.5
26C:							
Oriskany-------	7s	CC	---	---	---	---	---
26D:							
Oriskany-------	7s	CC	---	---	---	---	---
27E:							
Oriskany-------	7s	CC	---	---	---	---	---
28A:							
Philo----------	2w	H	---	140	25.0	3.0	7.5
29A:							
Pope-----------	1	A	6.0	160	24.0	4.5	8.0

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia soil management group	Alfalfa hay	Corn	Corn silage	Grass-legume hay	Pasture
			Tons	Bu	Tons	Tons	AUM
30. Quarries, limestone							
31F:							
Rock outcrop---	8s	---	---	---	---	---	---
Beech Grove----	7s	JJ	---	---	---	---	---
Benthole-------	7s	CC	---	---	---	---	---
32C:							
Shelocta-------	3e	L	4.8	114	17.0	3.5	8.0
32D:							
Shelocta-------	4e	L	4.4	104	16.0	3.2	8.0
33B:							
Slabtown-------	2e	G	5.5	140	21.0	4.5	9.0
33C:							
Slabtown-------	3e	G	4.8	123	19.0	4.0	9.0
34B:							
Tumbling-------	2e	O	5.5	130	20.0	4.0	7.5
34C:							
Tumbling-------	3e	O	4.8	114	17.0	3.5	7.5
34D:							
Tumbling-------	4e	O	4.4	104	16.0	3.2	7.0
35C:							
Tumbling-------	3e	O	4.8	---	---	3.5	7.5
35D:							
Tumbling-------	4e	O	4.4	---	---	3.2	7.0
36C:							
Tumbling-------	6s	O	---	---	---	---	6.5
36D:							
Tumbling-------	7s	O	---	---	---	---	---
37. Udorthents-Urban land							
38C:							
Watahala-------	3e	M	4.8	103	16.0	3.2	7.5
38D:							
Watahala-------	4e	M	4.3	94	14.0	2.9	7.0
38E:							
Watahala-------	6e	M	---	---	---	---	6.5

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia soil management group	Alfalfa hay	Corn	Corn silage	Grass-legume hay	Pasture
			Tons	Bu	Tons	Tons	AUM
38F:							
Watahala-------	7e	M	---	---	---	---	---
39C:							
Watahala-------	7s	M	---	---	---	---	---
39D:							
Watahala-------	7s	M	---	---	---	---	---
39E:							
Watahala-------	7e	M	---	---	---	---	---
40F:							
Weikert--------	7s	JJ	---	---	---	---	---
Rough----------	7s	JJ	---	---	---	---	---
Rock outcrop---	8s	---	---	---	---	---	---
41D:							
Westmoreland---	4e	U	3.5	90	14.0	3.0	8.0
Culleoka-------	4e	U	3.0	85	13.0	2.8	7.5
41E:							
Westmoreland---	6e	U	---	---	---	---	7.5
Culleoka-------	6e	U	---	---	---	---	7.5
W.							
Water							

Table 6.—Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland)

Map symbol	Map unit name
1B	Alonzville silt loam, 3 to 8 percent slopes, rarely flooded
23B	Nicelytown silt loam, 3 to 8 percent slopes
28A	Philo fine sandy loam, 0 to 3 percent slopes, occasionally flooded
29A	Pope fine sandy loam, 0 to 3 percent slopes, occasionally flooded
33B	Slabtown silt loam, 3 to 8 percent slopes
34B	Tumbling loam, 3 to 8 percent slopes

Table 7.—Agricultural Waste Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
1B:					
Alonzville	90	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Too acid	0.11	Too acid	0.42
				Flooding	0.40
2A:					
Atkins	90	Very limited		Very limited	
		Slow water movement	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Flooding	1.00
3D:					
Bailegap	90	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Large stones content	0.76	Slope	1.00
		Too acid	0.50	Too acid	0.99
4E:					
Bailegap	35	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Large stones content	0.76	Slope	1.00
		Too acid	0.50	Too acid	0.99
Lily	30	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.80	Slope	1.00
		Too acid	0.73	Too acid	1.00
Dekalb	25	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Large stones content	1.00	Droughty	1.00
5C:					
Berks	45	Somewhat limited		Very limited	
		Droughty	0.99	Low adsorption	1.00
		Too acid	0.73	Too acid	1.00
		Depth to bedrock	0.65	Droughty	0.99
Weikert	40	Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00
		Slope	0.63	Low adsorption	1.00

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
5D:					
Berks	50	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.99	Slope	1.00
		Too acid	0.73	Too acid	1.00
Weikert	35	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
5E:					
Berks	45	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.99	Slope	1.00
		Too acid	0.73	Too acid	1.00
Weikert	40	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
6D:					
Bland	85	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Slow water movement	0.50	Slope	1.00
				Too acid	0.96
		Too acid	0.37		
6E:					
Bland	90	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Slow water movement	0.50	Slope	1.00
				Too acid	0.96
		Too acid	0.37		
7D:					
Brushy	90	Very limited		Very limited	
		Droughty	1.00	Low adsorption	1.00
		Slope	1.00	Droughty	1.00
		Too acid	0.89	Too acid	1.00
7E:					
Brushy	90	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Too acid	0.89	Droughty	1.00
8D:					
Calvin	80	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.99	Slope	1.00
		Depth to bedrock	0.71	Too acid	1.00
8E:					
Calvin	90	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.99	Slope	1.00
		Depth to bedrock	0.71	Too acid	1.00

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
9D:					
Calvin--------------	80	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.99	Slope	1.00
		Depth to bedrock	0.71	Too acid	1.00
10E:					
Calvin--------------	55	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.99	Slope	1.00
		Depth to bedrock	0.71	Too acid	1.00
Rough---------------	30	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
11D:					
Carbo---------------	60	Very limited		Very limited	
		Slow water movement	1.00	Low adsorption	1.00
		Slope	1.00	Slow water movement	1.00
		Droughty	0.99	Slope	1.00
Rock outcrop--------	25	Not rated		Not rated	
11E:					
Carbo---------------	60	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Slow water movement	1.00	Slope	1.00
		Droughty	0.99	Slow water movement	1.00
Rock outcrop--------	25	Not rated		Not rated	
12D:					
Carbo---------------	60	Very limited		Very limited	
		Slow water movement	1.00	Low adsorption	1.00
		Slope	1.00	Slow water movement	1.00
		Droughty	0.99	Slope	1.00
Rock outcrop--------	25	Not rated		Not rated	
13F:					
Culleoka------------	55	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.90	Slope	1.00
		Depth to bedrock	0.71	Too acid	0.96
Berks---------------	35	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.99	Slope	1.00
		Too acid	0.73	Too acid	1.00

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
14D:					
Dekalb	90	Very limited		Very limited	
		Large stones content	1.00	Low adsorption	1.00
		Droughty	1.00	Droughty	1.00
		Slope	1.00	Slope	1.00
14E:					
Dekalb	85	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Large stones content	1.00	Slope	1.00
		Droughty	1.00	Droughty	1.00
15D:					
Dekalb	75	Very limited		Very limited	
		Large stones content	1.00	Low adsorption	1.00
		Droughty	1.00	Droughty	1.00
		Slope	1.00	Slope	1.00
Rock outcrop	15	Not rated		Not rated	
15F:					
Dekalb	75	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Large stones content	1.00	Slope	1.00
		Droughty	1.00	Droughty	1.00
Rock outcrop	15	Not rated		Not rated	
16C:					
Frederick	90	Somewhat limited		Somewhat limited	
		Slope	0.37	Too acid	0.85
		Too acid	0.27	Slope	0.37
16D:					
Frederick	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.27	Too acid	0.85
17C:					
Frederick	90	Somewhat limited		Somewhat limited	
		Slope	0.37	Too acid	0.67
		Too acid	0.18	Slope	0.37
17D:					
Frederick	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.18	Too acid	0.67
17E:					
Frederick	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.18	Too acid	0.67

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
18C:					
Frederick-----------	50	Somewhat limited		Somewhat limited	
		Slope	0.37	Too acid	0.67
		Too acid	0.18	Slope	0.37
Watahala------------	35	Somewhat limited		Very limited	
		Droughty	0.88	Too acid	0.99
		Strongly contrasting textural stratification	0.54	Droughty	0.88
		Too acid	0.50	Strongly contrasting textural stratification	0.54
18D:					
Frederick-----------	50	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.18	Too acid	0.67
Watahala------------	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Droughty	0.88	Too acid	0.99
		Strongly contrasting textural stratification	0.54	Droughty	0.88
19C:					
Gilpin--------------	85	Somewhat limited		Very limited	
		Slope	0.63	Low adsorption	1.00
		Too acid	0.27	Too acid	0.85
		Droughty	0.25	Slope	0.63
19D:					
Gilpin--------------	85	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.27	Slope	1.00
		Droughty	0.25	Too acid	0.85
20C:					
Jefferson-----------	90	Somewhat limited		Very limited	
		Too acid	0.73	Too acid	1.00
		Slope	0.63	Slope	0.63
20D:					
Jefferson-----------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.73	Too acid	1.00
21C:					
Lily----------------	90	Somewhat limited		Very limited	
		Droughty	0.80	Low adsorption	1.00
		Large stones content	0.76	Too acid	1.00
		Too acid	0.73	Droughty	0.80

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
21D:					
Lily----------------	85	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.80	Slope	1.00
		Large stones content	0.76	Too acid	1.00
21E:					
Lily----------------	85	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.80	Slope	1.00
		Large stones content	0.76	Too acid	1.00
22A:					
Maurertown----------	90	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
23B:					
Nicelytown----------	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	0.89	Slow water movement	0.78
		Too acid	0.11	Too acid	0.42
23C:					
Nicelytown----------	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	0.89	Slow water movement	0.78
		Slope	0.63	Slope	0.63
24B:					
Ogles---------------	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Large stones on the surface	1.00	Large stones on the surface	1.00
		Cobble content	0.87	Cobble content	0.87
25A:					
Ogles---------------	50	Very limited		Very limited	
		Large stones on the surface	1.00	Flooding	1.00
		Cobble content	0.87	Large stones on the surface	1.00
		Flooding	0.60	Cobble content	0.87
Pope----------------	25	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
		Leaching	0.45	Too acid	0.42
		Too acid	0.11	Droughty	0.10

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
25A:					
Philo	20	Very limited		Very limited	
		Ponding	1.00	Flooding	1.00
		Depth to saturated zone	0.95	Ponding	1.00
		Flooding	0.60	Depth to saturated zone	0.95
26C:					
Oriskany	90	Very limited		Somewhat limited	
		Large stones content	1.00	Too acid	0.96
		Slope	0.63	Slope	0.63
		Too acid	0.37		
26D:					
Oriskany	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Too acid	0.96
		Too acid	0.37		
27E:					
Oriskany	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Too acid	0.96
		Too acid	0.37		
28A:					
Philo	90	Very limited		Very limited	
		Ponding	1.00	Flooding	1.00
		Depth to saturated zone	0.95	Ponding	1.00
		Flooding	0.60	Depth to saturated zone	0.95
29A:					
Pope	90	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
		Leaching	0.45	Too acid	0.42
		Too acid	0.11	Droughty	0.10
30:					
Quarries, limestone	95	Not rated		Not rated	
31F:					
Rock outcrop	50	Not rated		Not rated	
Beech Grove	25	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
Benthole	20	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Droughty	0.09
		Droughty	0.09		

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
32C:					
Shelocta	90	Somewhat limited		Somewhat limited	
		Slope	0.63	Too acid	0.85
		Too acid	0.27	Slope	0.63
32D:					
Shelocta	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.27	Too acid	0.85
33B:					
Slabtown	90	Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.95	Depth to saturated zone	0.95
		Slow water movement	0.50	Slow water movement	0.37
33C:					
Slabtown	90	Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.95	Depth to saturated zone	0.95
		Slow water movement	0.50	Slow water movement	0.37
		Slope	0.37	Slope	0.37
34B:					
Tumbling	80	Somewhat limited		Somewhat limited	
		Too acid	0.27	Too acid	0.85
34C:					
Tumbling	85	Somewhat limited		Somewhat limited	
		Slope	0.37	Too acid	0.85
		Too acid	0.27	Slope	0.37
34D:					
Tumbling	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.27	Too acid	0.85
35C:					
Tumbling	90	Somewhat limited		Somewhat limited	
		Slope	0.37	Too acid	0.85
		Too acid	0.27	Slope	0.37
35D:					
Tumbling	85	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.27	Too acid	0.85
36C:					
Tumbling	80	Very limited		Somewhat limited	
		Large stones content	1.00	Too acid	0.85
		Slope	0.37	Slope	0.37
		Too acid	0.27		

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
36D:					
Tumbling-----------	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Too acid	0.85
		Too acid	0.27		
37:					
Udorthents----------	50	Not rated		Not rated	
Urban land----------	40	Not rated		Not rated	
38C:					
Watahala-----------	90	Somewhat limited		Very limited	
		Droughty	0.88	Too acid	0.99
		Strongly contrasting textural stratification	0.54	Droughty	0.88
		Too acid	0.50	Strongly contrasting textural stratification	0.54
38D:					
Watahala-----------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Droughty	0.88	Too acid	0.99
		Strongly contrasting textural stratification	0.54	Droughty	0.88
38E:					
Watahala-----------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Droughty	0.88	Too acid	0.99
		Strongly contrasting textural stratification	0.54	Droughty	0.88
38F:					
Watahala-----------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Droughty	0.88	Too acid	0.99
		Strongly contrasting textural stratification	0.54	Droughty	0.88
39C:					
Watahala-----------	90	Very limited		Very limited	
		Large stones content	1.00	Too acid	0.99
		Droughty	0.88	Droughty	0.88
		Strongly contrasting textural stratification	0.54	Strongly contrasting textural stratification	0.54

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
39D:					
Watahala------------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Too acid	0.99
		Droughty	0.88	Droughty	0.88
39E:					
Watahala------------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Too acid	0.99
		Droughty	0.88	Droughty	0.88
40F:					
Weikert-------------	35	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
Rough---------------	30	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
Rock outcrop--------	25	Not rated		Not rated	
41D:					
Westmoreland--------	45	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.11	Slope	1.00
				Too acid	0.42
Culleoka------------	40	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.90	Slope	1.00
		Depth to bedrock	0.71	Too acid	0.96
41E:					
Westmoreland--------	45	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.11	Slope	1.00
				Too acid	0.42
Culleoka------------	40	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.90	Slope	1.00
		Depth to bedrock	0.71	Too acid	0.96
W:					
Water---------------	100	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
1B:					
Alonzville----------	90	Very limited		Very limited	
		Ponding	1.00	Seepage	1.00
		Too steep for surface application	0.50	Ponding	1.00
		Too acid	0.42	Too acid	0.42
2A:					
Atkins--------------	90	Very limited		Very limited	
		Ponding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Ponding	1.00
		Flooding	1.00	Depth to saturated zone	1.00
3D:					
Bailegap------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.99	Too acid	0.99
4E:					
Bailegap------------	35	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.99	Too acid	0.99
Lily----------------	30	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Seepage	1.00
Dekalb--------------	25	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Droughty	1.00	Too steep for surface application	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
5C:					
Berks	45	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too acid	1.00	Seepage	1.00
		Droughty	0.99	Too acid	1.00
Weikert	40	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Too steep for surface application	1.00
5D:					
Berks	50	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Seepage	1.00
Weikert	35	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Too steep for surface application	1.00
5E:					
Berks	45	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Seepage	1.00
Weikert	40	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Too steep for surface application	1.00
6D:					
Bland	85	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
6E:					
Bland	90	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
7D:					
Brushy	90	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Droughty	1.00	Seepage	1.00
		Too acid	1.00	Too steep for surface application	1.00
7E:					
Brushy	90	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Droughty	1.00	Seepage	1.00
8D:					
Calvin	80	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Too acid	1.00	Too steep for surface application	1.00
8E:					
Calvin	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Too acid	1.00	Too steep for surface application	1.00
9D:					
Calvin	80	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Too acid	1.00	Too steep for surface application	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
10E:					
Calvin	55	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Too acid	1.00	Too steep for surface application	1.00
Rough	30	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Seepage	1.00
11D:					
Carbo	60	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
Rock outcrop	25	Not rated		Not rated	
11E:					
Carbo	60	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Seepage	1.00
Rock outcrop	25	Not rated		Not rated	
12D:					
Carbo	60	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
Rock outcrop	25	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Disposal of wastewater by irrigation: Value	Overland flow of wastewater: Rating class and limiting features	Overland flow of wastewater: Value
13F:					
Culleoka------------	55	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
Berks---------------	35	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Seepage	1.00
14D:					
Dekalb--------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Droughty	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
14E:					
Dekalb--------------	85	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Droughty	1.00	Too steep for surface application	1.00
15D:					
Dekalb--------------	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Droughty	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
Rock outcrop--------	15	Not rated		Not rated	
15F:					
Dekalb--------------	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Droughty	1.00	Too steep for surface application	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
15F:					
Rock outcrop	15	Not rated		Not rated	
16C:					
Frederick	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.85	Too steep for surface application	0.94
		Too steep for sprinkler application	0.60	Too acid	0.85
16D:					
Frederick	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.85	Too acid	0.85
17C:					
Frederick	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.67	Too steep for surface application	0.94
		Too steep for sprinkler application	0.60		0.94
				Too acid	0.67
17D:					
Frederick	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.67	Too acid	0.67
17E:					
Frederick	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.67	Too acid	0.67

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation		Overland flow of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
18C:					
Frederick	50	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.67	Too steep for surface application	0.94
		Too steep for sprinkler application	0.60	Too acid	0.67
Watahala	35	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.99	Too acid	0.99
		Droughty	0.88	Too steep for surface application	0.94
18D:					
Frederick	50	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.67	Too acid	0.67
Watahala	35	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Too acid	0.99
19C:					
Gilpin	85	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too acid	0.85	Seepage	1.00
		Too steep for sprinkler application	0.78	Too steep for surface application	1.00
19D:					
Gilpin	85	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.85	Seepage	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
20C:					
Jefferson-----------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	1.00	Too acid	1.00
		Too steep for sprinkler application	0.78	Too steep for surface application	1.00
20D:					
Jefferson-----------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Too acid	1.00
21C:					
Lily----------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too acid	1.00	Seepage	1.00
		Droughty	0.80	Too acid	1.00
21D:					
Lily----------------	85	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Seepage	1.00
21E:					
Lily----------------	85	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Seepage	1.00
22A:					
Maurertown----------	90	Very limited		Very limited	
		Slow water movement	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
23B:					
Nicelytown----------	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	0.78	Too acid	0.42
		Too acid	0.42	Seepage	0.22
23C:					
Nicelytown----------	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	0.78	Too acid	0.42
24B:					
Ogles---------------	90	Very limited		Very limited	
		Large stones on the surface	1.00	Flooding	1.00
		Flooding	1.00	Seepage	1.00
		Cobble content	0.87	Stone content	1.00
25A:					
Ogles---------------	50	Very limited		Very limited	
		Large stones on the surface	1.00	Flooding	1.00
		Cobble content	0.87	Seepage	1.00
		Flooding	0.60	Stone content	1.00
Pope----------------	25	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
		Too acid	0.42	Seepage	1.00
		Droughty	0.10	Too acid	0.42
Philo---------------	20	Very limited		Very limited	
		Ponding	1.00	Flooding	1.00
		Depth to saturated zone	0.95	Seepage	1.00
		Too acid	0.85	Ponding	1.00
26C:					
Oriskany------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.96	Stone content	1.00
		Too steep for sprinkler application	0.78	Too steep for surface application	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
26D:					
Oriskany------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Stone content	1.00
27E:					
Oriskany------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Stone content	1.00
28A:					
Philo---------------	90	Very limited		Very limited	
		Ponding	1.00	Flooding	1.00
		Depth to saturated zone	0.95	Seepage	1.00
		Too acid	0.85	Ponding	1.00
29A:					
Pope----------------	90	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
		Too acid	0.42	Seepage	1.00
		Droughty	0.10	Too acid	0.42
30:					
Quarries, limestone-	95	Not rated		Not rated	
31F:					
Rock outcrop--------	50	Not rated		Not rated	
Beech Grove---------	25	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Seepage	1.00
Benthole------------	20	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Droughty	0.09	Cobble content	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
32C:					
Shelocta	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.85	Too steep for surface application	1.00
		Too steep for sprinkler application	0.78	Too acid	0.85
32D:					
Shelocta	90	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.85	Too acid	0.85
33B:					
Slabtown	90	Somewhat limited		Very limited	
		Depth to saturated zone	0.95	Seepage	1.00
		Slow water movement	0.37	Depth to saturated zone	0.95
		Too steep for surface application	0.32		
33C:					
Slabtown	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Depth to saturated zone	0.95	Depth to saturated zone	0.95
		Too steep for sprinkler application	0.60	Too steep for surface application	0.94
34B:					
Tumbling	80	Somewhat limited		Very limited	
		Too acid	0.85	Seepage	1.00
		Too steep for surface application	0.32	Too acid	0.85
34C:					
Tumbling	85	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.85	Too steep for surface application	0.94
		Too steep for sprinkler application	0.60	Too acid	0.85

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
34D:					
Tumbling------------	80	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.85	Too acid	0.85
35C:					
Tumbling------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.85	Too steep for surface application	0.94
		Too steep for sprinkler application	0.60	Too acid	0.85
35D:					
Tumbling------------	85	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.85	Too acid	0.85
36C:					
Tumbling------------	80	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.85	Too steep for surface application	0.94
		Too steep for sprinkler application	0.60	Too acid	0.85
36D:					
Tumbling------------	80	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.85	Too acid	0.85
37:					
Udorthents----------	50	Not rated		Not rated	
Urban land----------	40	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
38C:					
Watahala------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.99	Too acid	0.99
		Droughty	0.88	Too steep for surface application	0.94
38D:					
Watahala------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Too acid	0.99
38E:					
Watahala------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Too acid	0.99
38F:					
Watahala------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Too acid	0.99
39C:					
Watahala------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.99	Too acid	0.99
		Droughty	0.88	Too steep for surface application	0.94
39D:					
Watahala------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Too acid	0.99

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
39E:					
Watahala	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Too acid	0.99
40F:					
Weikert	35	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Too steep for surface application	1.00
Rough	30	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Seepage	1.00
Rock outcrop	25	Not rated		Not rated	
41D:					
Westmoreland	45	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
				Depth to bedrock	0.71
		Too acid	0.42		
Culleoka	40	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
				Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.96		
41E:					
Westmoreland	45	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
				Depth to bedrock	0.71
		Too acid	0.42		

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation		Overland flow of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
41E:					
Culleoka------------	40	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
W:					
Water---------------	100	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part III

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
1B:					
Alonzville	90	Very limited		Very limited	
		Slow water movement	1.00	Ponding	1.00
		Ponding	1.00	Too steep for surface application	0.50
		Slope	0.28	Too acid	0.42
2A:					
Atkins	90	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Flooding	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Flooding	1.00
3D:					
Bailegap	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	1.00	Too acid	0.99
4E:					
Bailegap	35	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	1.00	Too acid	0.99
Lily	30	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep for sprinkler irrigation	1.00
Dekalb	25	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	1.00	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
5C:					
Berks---------------	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62		
				Too acid	1.00
Weikert-------------	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.46		
				Too steep for sprinkler irrigation	1.00
5D:					
Berks---------------	50	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62		
				Too steep for sprinkler irrigation	1.00
Weikert-------------	35	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.46		
				Too steep for sprinkler irrigation	1.00
5E:					
Berks---------------	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62		
				Too steep for sprinkler irrigation	1.00
Weikert-------------	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.46		
				Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
6D:					
Bland	85	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
6E:					
Bland	90	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
7D:					
Brushy	90	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
7E:					
Brushy	90	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
8D:					
Calvin	80	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.39	Too steep for sprinkler irrigation	1.00
8E:					
Calvin	90	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.39	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
9D:					
Calvin	80	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.39	Too steep for sprinkler irrigation	1.00
10E:					
Calvin	55	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.39	Too steep for sprinkler irrigation	1.00
Rough	30	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.77	Too steep for sprinkler irrigation	1.00
11D:					
Carbo	60	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
Rock outcrop	25	Not rated		Not rated	
11E:					
Carbo	60	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
Rock outcrop	25	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
12D:					
Carbo	60	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
Rock outcrop	25	Not rated		Not rated	
13F:					
Culleoka	55	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep for sprinkler irrigation	1.00
Berks	35	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep for sprinkler irrigation	1.00
14D:					
Dekalb	90	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	1.00	Too steep for sprinkler irrigation	1.00
14E:					
Dekalb	85	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	1.00	Too steep for sprinkler irrigation	1.00
15D:					
Dekalb	75	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	1.00	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
15D:					
Rock outcrop--------	15	Not rated		Not rated	
15F:					
Dekalb--------------	75	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	1.00	Too steep for sprinkler irrigation	1.00
Rock outcrop--------	15	Not rated		Not rated	
16C:					
Frederick-----------	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	0.94
				Too acid	0.85
16D:					
Frederick-----------	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.85
17C:					
Frederick-----------	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	0.94
				Too acid	0.67
17D:					
Frederick-----------	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.67

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
17E:					
Frederick	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.67
18C:					
Frederick	50	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	0.94
				Too acid	0.67
Watahala	35	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too acid	0.99
				Too steep for sprinkler irrigation	0.94
18D:					
Frederick	50	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.67
Watahala	35	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.99
19C:					
Gilpin	85	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
19D:					
Gilpin	85	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
20C:					
Jefferson	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too acid	1.00
		Too acid	0.03	Too steep for sprinkler irrigation	1.00
20D:					
Jefferson	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
		Too acid	0.03	Too acid	1.00
21C:					
Lily	90	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too acid	1.00
21D:					
Lily	85	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep for sprinkler irrigation	1.00
21E:					
Lily	85	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
22A:					
Maurertown----------	90	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slow water movement	1.00
23B:					
Nicelytown----------	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slow water movement	0.60
		Slope	0.12	Too acid	0.42
23C:					
Nicelytown----------	90	Very limited		Very limited	
		Slope	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to saturated zone	1.00	Too steep for sprinkler irrigation	1.00
24B:					
Ogles---------------	90	Very limited		Very limited	
		Flooding	1.00	Large stones on the surface	1.00
		Depth to saturated zone	1.00	Flooding	1.00
		Stone content	1.00	Cobble content	0.87
25A:					
Ogles---------------	50	Very limited		Very limited	
		Depth to saturated zone	1.00	Large stones on the surface	1.00
		Stone content	1.00	Cobble content	0.87
		Cobble content	1.00	Flooding	0.60
Pope----------------	25	Somewhat limited		Somewhat limited	
		Slow water movement	0.62	Flooding	0.60
		Flooding	0.60	Too acid	0.42
Philo---------------	20	Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00
		Slow water movement	1.00	Depth to saturated zone	0.95
		Ponding	1.00	Too acid	0.85

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
26C:					
Oriskany	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Stone content	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	0.32	Too acid	0.96
26D:					
Oriskany	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Stone content	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	0.32	Too acid	0.96
27E:					
Oriskany	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Stone content	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	0.32	Too acid	0.96
28A:					
Philo	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00
		Slow water movement	1.00	Depth to saturated zone	0.95
		Ponding	1.00	Too acid	0.85
29A:					
Pope	90	Somewhat limited		Somewhat limited	
		Slow water movement	0.62	Flooding	0.60
		Flooding	0.60	Too acid	0.42
30:					
Quarries, limestone	95	Not rated		Not rated	
31F:					
Rock outcrop	50	Not rated		Not rated	
Beech Grove	25	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
31F:					
Benthole	20	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Cobble content	1.00	Too steep for sprinkler irrigation	1.00
32C:					
Shelocta	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
				Too steep for sprinkler irrigation	1.00
				Too acid	0.85
32D:					
Shelocta	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
				Too steep for sprinkler irrigation	1.00
				Too acid	0.85
33B:					
Slabtown	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Depth to saturated zone	0.95
		Depth to saturated zone	0.95	Too steep for surface application	0.32
		Slope	0.12		
				Slow water movement	0.26
33C:					
Slabtown	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Depth to saturated zone	0.95	Depth to saturated zone	0.95
				Too steep for sprinkler irrigation	0.94
34B:					
Tumbling	80	Very limited		Somewhat limited	
		Slow water movement	1.00	Too acid	0.85
				Too steep for surface application	0.32
		Slope	0.12		
		Too acid	0.03		

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
34C:					
Tumbling-----------	85	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.03	Too steep for sprinkler irrigation	0.94
				Too acid	0.85
34D:					
Tumbling-----------	80	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.03	Too steep for sprinkler irrigation	1.00
				Too acid	0.85
35C:					
Tumbling-----------	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.03	Too steep for sprinkler irrigation	0.94
				Too acid	0.85
35D:					
Tumbling-----------	85	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.03	Too steep for sprinkler irrigation	1.00
				Too acid	0.85
36C:					
Tumbling-----------	80	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.03	Too steep for sprinkler irrigation	0.94
				Too acid	0.85
36D:					
Tumbling-----------	80	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.03	Too steep for sprinkler irrigation	1.00
				Too acid	0.85

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
37:					
Udorthents----------	50	Not rated		Not rated	
Urban land----------	40	Not rated		Not rated	
38C:					
Watahala------------	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too acid	0.99
				Too steep for sprinkler irrigation	0.94
38D:					
Watahala------------	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.99
38E:					
Watahala------------	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.99
38F:					
Watahala------------	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.99
39C:					
Watahala------------	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too acid	0.99
				Too steep for sprinkler irrigation	0.94

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
39D:					
Watahala------------	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.99
39E:					
Watahala------------	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.99
40F:					
Weikert-------------	35	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.46	Too steep for sprinkler irrigation	1.00
Rough---------------	30	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.77	Too steep for sprinkler irrigation	1.00
Rock outcrop--------	25	Not rated		Not rated	
41D:					
Westmoreland--------	45	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	1.00	Depth to bedrock	0.71
Culleoka------------	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
41E:					
Westmoreland	45	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	1.00	Depth to bedrock	0.71
Culleoka	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep for sprinkler irrigation	1.00
W:					
Water	100	Not rated		Not rated	

Table 8.—Forestland Productivity

(Absence of an entry indicates that information was not available)

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
1B:				
Alonzville	American elm	---	---	yellow-poplar, eastern white pine, white oak, northern red oak, black walnut, black oak
	black oak	78	60	
	northern red oak	80	---	
	pignut hickory	---	---	
	shortleaf pine	80	129	
	sugar maple	---	---	
	Virginia pine	72	112	
	white ash	---	---	
	yellow-poplar	93	95	
2A:				
Atkins	red maple	75	---	pin oak, swamp white oak, sweetgum
	sweetgum	95	---	
	American sycamore	92	108	
	swamp white oak	70	---	
	eastern cottonwood	95	74	
	sweetgum	100	138	
	pin oak	99	77	
3D:				
Bailegap	northern red oak	65	48	white oak, eastern white pine, hickory, northern red oak, black oak
	eastern white pine	80	144	
	chestnut oak	59	41	
	scarlet oak	60	42	
	white oak	69	48	
4E:				
Bailegap	northern red oak	65	48	white oak, eastern white pine, hickory, northern red oak, black oak
	eastern white pine	80	144	
	chestnut oak	59	41	
	scarlet oak	60	42	
	white oak	69	48	
Lily	northern red oak	65	47	white oak, eastern white pine, hickory, northern red oak, black oak
	chestnut oak	60	42	
	scarlet oak	60	47	
	Virginia pine	70	108	
	white oak	70	52	
Dekalb	northern red oak	55	38	white oak, eastern white pine, northern red oak, Virginia pine
	chestnut oak	60	42	
	scarlet oak	55	38	
	white oak	60	42	
	Virginia pine	65	100	
5C:				
Berks	northern red oak	64	47	northern red oak, eastern white pine, black oak, Virginia pine
	black oak	63	46	
	Virginia pine	60	92	
	chestnut oak	58	41	
	scarlet oak	63	46	
Weikert	northern red oak	55	39	northern red oak, eastern white pine, Virginia pine
	scarlet oak	52	36	
	chestnut oak	45	31	
	Virginia pine	56	80	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
5D:				
Berks	northern red oak	64	47	northern red oak, eastern white pine, black oak, Virginia pine
	black oak	63	46	
	Virginia pine	60	92	
	chestnut oak	58	41	
	scarlet oak	63	46	
Weikert	northern red oak	55	39	northern red oak, eastern white pine, Virginia pine
	scarlet oak	52	36	
	chestnut oak	45	31	
	Virginia pine	56	80	
5E:				
Berks	northern red oak	64	47	northern red oak, eastern white pine, black oak, Virginia pine
	black oak	63	46	
	Virginia pine	60	92	
	chestnut oak	58	41	
	scarlet oak	63	46	
Weikert	northern red oak	55	39	northern red oak, eastern white pine, Virginia pine
	scarlet oak	52	36	
	chestnut oak	45	31	
	Virginia pine	56	80	
6D:				
Bland	northern red oak	70	52	yellow-poplar, eastern white pine, northern red oak, white oak, sugar maple, black walnut
	red maple	75	45	
	Virginia pine	70	108	
	yellow-poplar	76	62	
6E:				
Bland	northern red oak	70	52	yellow-poplar, eastern white pine, northern red oak, white oak, sugar maple, black walnut
	red maple	75	45	
	Virginia pine	70	108	
	yellow-poplar	76	62	
7D:				
Brushy	northern red oak	70	52	eastern white pine, hickory, northern red oak, yellow-poplar, sugar maple
	chestnut oak	65	47	
	scarlet oak	65	47	
	Virginia pine	75	114	
	yellow-poplar	75	61	
7E:				
Brushy	northern red oak	70	52	eastern white pine, hickory, northern red oak, yellow-poplar, sugar maple
	chestnut oak	65	47	
	scarlet oak	65	47	
	Virginia pine	75	114	
	yellow-poplar	75	61	
8D:				
Calvin	northern red oak	65	47	northern red oak, eastern white pine, black oak, Virginia pine
	black oak	60	42	
	Virginia pine	65	100	
	scarlet oak	65	47	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
8E:				
Calvin	northern red oak	65	47	northern red oak,
	black oak	60	42	eastern white
	Virginia pine	65	100	pine, black oak,
	scarlet oak	65	47	Virginia pine
9D:				
Calvin	northern red oak	65	47	northern red oak,
	black oak	60	42	eastern white
	Virginia pine	65	100	pine, black oak,
	scarlet oak	65	47	Virginia pine
10E:				
Calvin	northern red oak	65	47	northern red oak,
	black oak	60	42	eastern white
	Virginia pine	65	100	pine, black oak,
	scarlet oak	65	47	Virginia pine
Rough	Virginia pine	38	26	northern red oak,
	chestnut oak	38	26	eastern white
	scarlet oak	38	26	pine, black oak,
	northern red oak	42	29	Virginia pine
11D:				
Carbo	northern red oak	65	47	northern red oak,
	black locust	60	38	yellow-poplar,
	eastern redcedar	46	57	eastern white
	red maple	75	45	pine, black
	Virginia pine	55	79	locust, sugar
	yellow-poplar	80	72	maple
Rock outcrop.				
11E:				
Carbo	northern red oak	65	47	northern red oak,
	black locust	60	38	yellow-poplar,
	eastern redcedar	46	57	eastern white
	red maple	75	45	pine, black
	Virginia pine	55	79	locust, sugar
	yellow-poplar	80	72	maple
Rock outcrop.				
12D:				
Carbo	northern red oak	65	47	northern red oak,
	black locust	60	38	yellow-poplar,
	eastern redcedar	46	57	eastern white
	red maple	75	45	pine, black
	Virginia pine	55	79	locust, sugar
	yellow-poplar	80	72	maple
Rock outcrop.				

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
13F:				
Culleoka	northern red oak	75	56	black oak, eastern white pine, hickory, northern red oak, yellow-poplar, white oak, sugar maple
	black oak	75	56	
	Virginia pine	65	100	
	yellow-poplar	85	80	
	chestnut oak	75	56	
	white oak	75	56	
Berks	northern red oak	64	47	black oak, northern red oak, eastern white pine, Virginia pine
	black oak	63	46	
	Virginia pine	60	92	
	chestnut oak	58	41	
	scarlet oak	63	46	
14D:				
Dekalb	northern red oak	55	38	northern red oak, white oak, eastern white pine, Virginia pine
	chestnut oak	60	42	
	scarlet oak	55	38	
	white oak	60	42	
	Virginia pine	65	100	
14E:				
Dekalb	northern red oak	55	38	northern red oak, white oak, eastern white pine, Virginia pine
	chestnut oak	60	42	
	scarlet oak	55	38	
	white oak	60	42	
	Virginia pine	65	100	
15D:				
Dekalb	northern red oak	55	38	northern red oak, white oak, eastern white pine, Virginia pine
	chestnut oak	60	42	
	scarlet oak	55	38	
	white oak	60	42	
	Virginia pine	65	100	
Rock outcrop.				
15F:				
Dekalb	northern red oak	55	38	northern red oak, white oak, eastern white pine, Virginia pine
	chestnut oak	60	42	
	scarlet oak	55	38	
	white oak	60	42	
	Virginia pine	65	100	
Rock outcrop.				
16C:				
Frederick	northern red oak	76	59	eastern white pine, black walnut, northern red oak, yellow-poplar, hickory, white oak
	eastern white pine	80	130	
	black walnut	76	59	
	white oak	75	58	
	yellow-poplar	86	81	
16D:				
Frederick	northern red oak	76	59	eastern white pine, black walnut, northern red oak, yellow-poplar, hickory, white oak
	eastern white pine	80	130	
	black walnut	76	59	
	white oak	75	58	
	yellow-poplar	86	81	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
17C:				
Frederick	northern red oak	76	59	eastern white pine, black walnut, northern red oak, yellow-poplar, hickory, white oak
	eastern white pine	80	130	
	black walnut	76	59	
	white oak	75	58	
	yellow-poplar	86	86	
17D:				
Frederick	northern red oak	76	59	eastern white pine, black walnut, northern red oak, yellow-poplar, hickory, white oak
	eastern white pine	80	130	
	black walnut	76	59	
	white oak	75	58	
	yellow-poplar	86	81	
17E:				
Frederick	northern red oak	76	59	eastern white pine, black walnut, northern red oak, yellow-poplar, hickory, white oak
	eastern white pine	80	130	
	black walnut	76	59	
	white oak	75	58	
	yellow-poplar	86	81	
18C:				
Frederick	northern red oak	76	59	eastern white pine, black walnut, northern red oak, yellow-poplar, hickory, white oak, sugar maple
	eastern white pine	80	130	
	black walnut	76	59	
	white oak	75	58	
	yellow-poplar	86	86	
Watahala	northern red oak	75	59	eastern white pine, hickory, northern red oak, yellow-poplar, black oak, white oak, sugar maple
	eastern white pine	80	130	
	white oak	75	59	
	black walnut	75	59	
	yellow-poplar	85	80	
18D:				
Frederick	northern red oak	76	59	eastern white pine, black walnut, northern red oak, yellow-poplar, hickory, white oak, sugar maple
	eastern white pine	80	130	
	black walnut	76	59	
	white oak	75	58	
	yellow-poplar	86	81	
Watahala	northern red oak	75	59	eastern white pine, hickory, northern red oak, yellow-poplar, black oak, white oak, sugar maple
	eastern white pine	80	130	
	white oak	75	59	
	black walnut	75	59	
	yellow-poplar	85	80	
19C:				
Gilpin	northern red oak	70	52	black oak, eastern white pine, hickory, northern red oak, yellow-poplar, white oak
	red maple	80	62	
	Virginia pine	70	109	
	black cherry	80	62	
	black oak	70	52	
	white oak	75	57	
	yellow-poplar	90	91	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
19D:				
Gilpin	northern red oak	70	52	black oak, eastern white pine, hickory, northern red oak, yellow-poplar, white oak
	red maple	80	62	
	Virginia pine	70	109	
	black cherry	80	62	
	black oak	70	52	
	white oak	75	57	
	yellow-poplar	90	91	
20C:				
Jefferson	northern red oak	75	56	eastern white pine, hickory, northern red oak, yellow-poplar, white oak
	white oak	75	56	
	yellow-poplar	100	107	
	eastern white pine	105	196	
20D:				
Jefferson	northern red oak	75	56	eastern white pine, hickory, northern red oak, yellow-poplar, white oak
	white oak	75	56	
	yellow-poplar	100	107	
	eastern white pine	105	196	
21C:				
Lily	northern red oak	65	47	white oak, eastern white pine, hickory, northern red oak, black oak
	chestnut oak	60	42	
	scarlet oak	60	47	
	Virginia pine	70	108	
	white oak	70	52	
21D:				
Lily	northern red oak	65	47	white oak, eastern white pine, hickory, northern red oak, black oak
	chestnut oak	60	42	
	scarlet oak	60	47	
	Virginia pine	70	108	
	white oak	70	52	
21E:				
Lily	northern red oak	65	47	white oak, eastern white pine, hickory, northern red oak, black oak
	chestnut oak	60	42	
	scarlet oak	60	47	
	Virginia pine	70	108	
	white oak	70	52	
22A:				
Maurertown	red maple	80	---	swamp white oak, sweetgum
	sweetgum	95	---	
	swamp white oak	75	---	
23B:				
Nicelytown	northern red oak	80	62	yellow-poplar, northern red oak, eastern white pine, white oak
	Virginia pine	70	109	
	white oak	75	57	
	yellow-poplar	95	100	
23C:				
Nicelytown	northern red oak	80	62	yellow-poplar, northern red oak, eastern white pine, white oak
	Virginia pine	70	109	
	white oak	75	57	
	yellow-poplar	95	100	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
24B:				
Ogles	northern red oak	70	57	northern red oak, yellow-poplar, eastern white pine
	eastern white pine	80	142	
	Virginia pine	60	86	
	yellow-poplar	90	86	
25A:				
Ogles	northern red oak	70	57	northern red oak, yellow-poplar, eastern white pine
	eastern white pine	80	142	
	Virginia pine	60	86	
	yellow-poplar	90	86	
Pope	northern red oak	80	62	northern red oak, yellow-poplar, eastern white pine, white oak
	yellow-poplar	96	100	
	white oak	80	62	
Philo	white ash	85	70	northern red oak, black walnut, eastern white pine, white ash, white oak, yellow-poplar
	yellow-poplar	102	112	
	Virginia pine	74	112	
	white oak	85	70	
	northern red oak	86	72	
	black oak	85	70	
26C:				
Oriskany	northern red oak	75	57	eastern white pine, hickory, northern red oak, yellow-poplar, white oak
	white oak	85	68	
	yellow-poplar	100	107	
	scarlet oak	75	57	
26D:				
Oriskany	northern red oak	75	57	eastern white pine, hickory, northern red oak, yellow-poplar, white oak
	white oak	85	68	
	yellow-poplar	100	107	
	scarlet oak	75	57	
27E:				
Oriskany	northern red oak	75	57	eastern white pine, hickory, northern red oak, yellow-poplar, white oak
	white oak	85	68	
	yellow-poplar	100	107	
	scarlet oak	75	57	
28A:				
Philo	white ash	85	70	northern red oak, black walnut, eastern white pine, white oak, yellow-poplar, white ash
	yellow-poplar	102	112	
	Virginia pine	74	112	
	white oak	85	70	
	northern red oak	86	72	
	black oak	85	70	
29A:				
Pope	northern red oak	80	62	northern red oak, eastern white pine, white oak, yellow-poplar
	yellow-poplar	96	100	
	white oak	80	62	
30.				
Quarries, limestone				

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
31F:				
Rock outcrop.				
Beech Grove	northern red oak	50	32	---
	chestnut oak	52	36	
	eastern redcedar	35	40	
	Virginia pine	45	52	
Benthole	northern red oak	75	56	eastern white pine, hickory, northern red oak, yellow-poplar, white oak, black oak
	black locust	80	57	
	black walnut	76	57	
	red maple	82	57	
	yellow-poplar	85	80	
32C:				
Shelocta	northern red oak	85	72	black oak, eastern white pine, hickory, northern red oak, yellow-poplar, white oak, black walnut
	black oak	80	62	
	red maple	80	62	
	scarlet oak	75	57	
	white oak	80	62	
	yellow-poplar	100	107	
	eastern white pine	90	166	
32D:				
Shelocta	northern red oak	85	72	black oak, eastern white pine, hickory, northern red oak, yellow-poplar, white oak, black walnut
	black oak	80	62	
	red maple	80	62	
	scarlet oak	75	57	
	white oak	80	62	
	yellow-poplar	100	107	
	eastern white pine	90	166	
33B:				
Slabtown	northern red oak	70	52	northern red oak, black walnut, eastern white pine, sugar maple, white oak, yellow-poplar
	black walnut	80	62	
	red maple	---	---	
	sugar maple	---	---	
	white oak	75	56	
	yellow-poplar	85	80	
33C:				
Slabtown	northern red oak	70	52	northern red oak, black walnut, eastern white pine, sugar maple, white oak, yellow-poplar
	black walnut	80	62	
	red maple	---	---	
	sugar maple	---	---	
	white oak	75	56	
	yellow-poplar	85	80	
34B:				
Tumbling	northern red oak	80	62	eastern white pine, hickory, northern red oak, black walnut, black oak, white oak, yellow-poplar
	eastern white pine	80	144	
	yellow-poplar	90	91	
	scarlet oak	75	57	
	white oak	75	57	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
34C:				
Tumbling	northern red oak	80	62	eastern white pine, hickory, northern red oak, black walnut, black oak, white oak, yellow-poplar
	eastern white pine	80	144	
	yellow-poplar	90	91	
	scarlet oak	75	57	
	white oak	75	57	
34D:				
Tumbling	northern red oak	80	62	eastern white pine, hickory, northern red oak, black walnut, black oak, white oak, yellow-poplar
	eastern white pine	80	144	
	yellow-poplar	90	91	
	scarlet oak	75	57	
	white oak	75	57	
35C:				
Tumbling	northern red oak	80	62	eastern white pine, hickory, northern red oak, black walnut, black oak, white oak, yellow-poplar
	eastern white pine	80	144	
	yellow-poplar	90	91	
	scarlet oak	75	57	
	white oak	75	57	
35D:				
Tumbling	northern red oak	80	62	eastern white pine, hickory, northern red oak, black walnut, black oak, white oak, yellow-poplar
	eastern white pine	80	144	
	yellow-poplar	90	91	
	scarlet oak	75	57	
	white oak	75	57	
36C:				
Tumbling	northern red oak	80	62	eastern white pine, hickory, northern red oak, black walnut, black oak, white oak, yellow-poplar
	eastern white pine	80	144	
	yellow-poplar	90	91	
	scarlet oak	75	57	
	white oak	75	57	
36D:				
Tumbling	northern red oak	80	62	eastern white pine, hickory, northern red oak, black walnut, black oak, white oak, yellow-poplar
	eastern white pine	80	144	
	yellow-poplar	90	91	
	scarlet oak	75	57	
	white oak	75	57	
37.				
Udorthents-Urban land				
38C:				
Watahala	northern red oak	75	59	eastern white pine, hickory, northern red oak, yellow-poplar, black oak, white oak, sugar maple
	eastern white pine	80	130	
	white oak	75	59	
	black walnut	75	59	
	yellow-poplar	85	80	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
38D:				
Watahala	northern red oak	75	59	eastern white pine, hickory, northern red oak, yellow-poplar, black oak, white oak, sugar maple
	eastern white pine	80	130	
	white oak	75	59	
	black walnut	75	59	
	yellow-poplar	85	80	
38E:				
Watahala	northern red oak	75	59	eastern white pine, hickory, northern red oak, yellow-poplar, black oak, white oak, sugar maple
	eastern white pine	80	130	
	white oak	75	59	
	black walnut	75	59	
	yellow-poplar	85	80	
38F:				
Watahala	northern red oak	75	59	eastern white pine, hickory, northern red oak, yellow-poplar, black oak, white oak, sugar maple
	eastern white pine	80	130	
	white oak	75	59	
	black walnut	75	59	
	yellow-poplar	85	80	
39C:				
Watahala	northern red oak	75	59	eastern white pine, hickory, northern red oak, yellow-poplar, black oak, white oak, sugar maple
	eastern white pine	80	130	
	white oak	75	59	
	black walnut	75	59	
	yellow-poplar	85	80	
39D:				
Watahala	northern red oak	75	59	eastern white pine, hickory, northern red oak, yellow-poplar, black oak, white oak, sugar maple
	eastern white pine	80	130	
	white oak	75	59	
	black walnut	75	59	
	yellow-poplar	85	80	
39E:				
Watahala	northern red oak	75	59	eastern white pine, hickory, northern red oak, yellow-poplar, black oak, white oak, sugar maple
	eastern white pine	80	130	
	white oak	75	59	
	black walnut	75	59	
	yellow-poplar	85	80	
40F:				
Weikert	northern red oak	55	39	northern red oak, eastern white pine, Virginia pine
	scarlet oak	52	36	
	chestnut oak	45	31	
	Virginia pine	56	80	
Rough	Virginia pine	38	26	northern red oak, eastern white pine, Virginia pine
	chestnut oak	38	26	
	scarlet oak	38	26	
	northern red oak	42	29	
Rock outcrop.				

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
41D:				
Westmoreland------------	northern red oak----	80	62	black oak, eastern
	chestnut oak--------	80	62	white pine,
	black locust--------	75	57	hickory, northern
	yellow-poplar-------	95	95	red oak, yellow-
	black oak-----------	80	62	poplar, white oak,
	white oak-----------	80	62	sugar maple
Culleoka----------------	northern red oak----	75	56	black oak, eastern
	black oak-----------	75	56	white pine,
	Virginia pine-------	65	100	hickory, northern
	yellow-poplar-------	85	80	red oak, yellow-
	chestnut oak--------	75	56	poplar, white oak,
	white oak-----------	75	56	sugar maple
41E:				
Westmoreland------------	northern red oak----	80	62	black oak, eastern
	chestnut oak--------	80	62	white pine,
	black locust--------	75	57	hickory, northern
	yellow-poplar-------	95	95	red oak, yellow-
	black oak-----------	80	62	poplar, white oak,
	white oak-----------	80	62	sugar maple
Culleoka----------------	northern red oak----	75	56	black oak, eastern
	black oak-----------	75	56	white pine,
	Virginia pine-------	65	100	hickory, northern
	yellow-poplar-------	85	80	red oak, yellow-
	chestnut oak--------	75	56	poplar, white oak,
	white oak-----------	75	56	sugar maple
W.				
Water				

Table 9.—Forestland Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
1B:							
Alonzville------	90	Moderate		Poorly suited		Severe	
		Low strength	0.50	Ponding	1.00	Low strength	1.00
		Sandiness	0.50	Sandiness	0.50		
				Low strength	0.50		
2A:							
Atkins----------	90	Severe		Poorly suited		Moderate	
		Flooding	1.00	Ponding	1.00	Low strength	0.50
		Wetness	1.00	Flooding	1.00		
				Wetness	0.50		
3D:							
Bailegap--------	90	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
		Restrictive layer	0.50				
4E:							
Bailegap--------	35	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Low strength	0.50				
Lily------------	30	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Low strength	0.50				
Dekalb----------	25	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
5C:							
Berks-----------	45	Moderate		Moderately suited		Moderate	
		Restrictive layer	0.50	Slope	0.50	Low strength	0.50
Weikert---------	40	Severe		Moderately suited		Moderate	
		Restrictive layer	1.00	Slope	0.50	Low strength	0.50
5D:							
Berks-----------	50	Severe		Poorly suited		Moderate	
		Restrictive layer	1.00	Slope	1.00	Low strength	0.50
		Slope	0.50				
Weikert---------	35	Severe		Poorly suited		Moderate	
		Restrictive layer	1.00	Slope	1.00	Low strength	0.50
		Slope	0.50				
5E:							
Berks-----------	45	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
Weikert---------	40	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
6D:							
Bland-----------	85	Moderate		Poorly suited		Severe	
		Restrictive layer	0.50	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
6E:							
Bland-----------	90	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
7D:							
Brushy----------	90	Moderate		Poorly suited		Slight	
		Slope	0.50	Slope	1.00	Strength	0.10
		Restrictive layer	0.50				
		Sandiness	0.50				
7E:							
Brushy----------	90	Severe		Poorly suited		Slight	
		Slope	1.00	Slope	1.00	Strength	0.10
8D:							
Calvin----------	80	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
8E:							
Calvin----------	90	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
9D:							
Calvin----------	80	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
10E:							
Calvin----------	55	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Rough-----------	30	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
11D:							
Carbo-----------	60	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
Rock outcrop----	25	Not rated		Not rated		Not rated	
11E:							
Carbo-----------	60	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Rock outcrop----	25	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
12D:							
Carbo-----------	60	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
Rock outcrop----	25	Not rated		Not rated		Not rated	
13F:							
Culleoka--------	55	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Berks-----------	35	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
14D:							
Dekalb----------	90	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
		Restrictive layer	0.50	Rock fragments	0.50		
		Stoniness	0.50				
14E:							
Dekalb----------	85	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
15D:							
Dekalb----------	75	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
		Restrictive layer	0.50	Rock fragments	0.50		
		Stoniness	0.50				
Rock outcrop----	15	Not rated		Not rated		Not rated	
15F:							
Dekalb----------	75	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
Rock outcrop----	15	Not rated		Not rated		Not rated	
16C:							
Frederick-------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
16D:							
Frederick-------	90	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
17C:							
Frederick-------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
17D:							
Frederick-------	90	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
17E:							
Frederick-------	90	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
18C:							
Frederick-------	50	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
Watahala--------	35	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
18D:							
Frederick-------	50	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Watahala--------	35	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
19C:							
Gilpin----------	85	Slight		Moderately suited		Severe	
				Slope	0.50	Low strength	1.00
				Low strength	0.50		
19D:							
Gilpin----------	85	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
20C:							
Jefferson-------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
20D:							
Jefferson-------	90	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
21C:							
Lily------------	90	Moderate		Moderately suited		Moderate	
		Restrictive layer	0.50	Slope	0.50	Low strength	0.50
21D:							
Lily------------	85	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
		Restrictive layer	0.50				

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
21E:							
Lily-----------	85	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Low strength	0.50				
22A:							
Maurertown------	90	Severe		Poorly suited		Severe	
		Wetness	1.00	Ponding	1.00	Low strength	1.00
		Low strength	0.50	Wetness	0.50		
				Low strength	0.50		
23B:							
Nicelytown------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
23C:							
Nicelytown------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
24B:							
Ogles-----------	90	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Low strength	0.50
		Stoniness	1.00	Low strength	0.50		
		Low strength	0.50				
25A:							
Ogles-----------	50	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Low strength	0.50
		Stoniness	1.00	Low strength	0.50		
		Low strength	0.50				
Pope------------	25	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Low strength	0.50
Philo-----------	20	Severe		Poorly suited		Moderate	
		Flooding	1.00	Ponding	1.00	Low strength	0.50
				Flooding	1.00		
26C:							
Oriskany--------	90	Severe		Moderately suited		Moderate	
		Stoniness	1.00	Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
26D:							
Oriskany--------	90	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
27E:							
Oriskany--------	90	Severe		Poorly suited		Moderate	
		Stoniness	1.00	Rock fragments	1.00	Low strength	0.50
		Slope	1.00	Slope	1.00		
28A:							
Philo-----------	90	Severe		Poorly suited		Moderate	
		Flooding	1.00	Ponding	1.00	Low strength	0.50
				Flooding	1.00		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
29A:							
Pope------------	90	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Low strength	0.50
30:							
Quarries, limestone------	95	Not rated		Not rated		Not rated	
31F:							
Rock outcrop----	50	Not rated		Not rated		Not rated	
Beech Grove-----	25	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Benthole--------	20	Severe		Poorly suited		Severe	
		Slope	1.00	Rock fragments	1.00	Low strength	1.00
		Stoniness	0.50	Slope	1.00		
		Low strength	0.50	Low strength	0.50		
32C:							
Shelocta--------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
32D:							
Shelocta--------	90	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
33B:							
Slabtown--------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
33C:							
Slabtown--------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
34B:							
Tumbling--------	80	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
34C:							
Tumbling--------	85	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
34D:							
Tumbling--------	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
35C:							
Tumbling--------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
35D:							
Tumbling--------	85	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
36C:							
Tumbling--------	80	Moderate		Moderately suited		Severe	
		Stoniness	0.50	Slope	0.50	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
				Rock fragments	0.50		
36D:							
Tumbling--------	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Low strength	0.50		
				Rock fragments	0.50		
37:							
Udorthents------	50	Not rated		Not rated		Not rated	
Urban land------	40	Not rated		Not rated		Not rated	
38C:							
Watahala--------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
38D:							
Watahala--------	90	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
38E:							
Watahala--------	90	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
38F:							
Watahala--------	90	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
39C:							
Watahala--------	90	Moderate		Moderately suited		Severe	
		Stoniness	0.50	Slope	0.50	Low strength	1.00
		Low strength	0.50	Rock fragments	0.50		
				Low strength	0.50		
39D:							
Watahala--------	90	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
				Low strength	0.50		
39E:							
Watahala--------	90	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
		Low strength	0.50	Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40F:							
Weikert---------	35	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
Rough-----------	30	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Rock outcrop----	25	Not rated		Not rated		Not rated	
41D:							
Westmoreland----	45	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
Culleoka--------	40	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
41E:							
Westmoreland----	45	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
Culleoka--------	40	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
W:							
Water-----------	100	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
1B:							
Alonzville------	90	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Ponding	1.00
						Sandiness	0.50
						Low strength	0.50
2A:							
Atkins----------	90	Slight		Slight		Poorly suited	
						Ponding	1.00
						Flooding	1.00
						Wetness	0.50
3D:							
Bailegap--------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
4E:							
Bailegap--------	35	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
Lily------------	30	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
Dekalb----------	25	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
5C:							
Berks-----------	45	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
Weikert---------	40	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
5D:							
Berks-----------	50	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
Weikert---------	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
5E:							
Berks-----------	45	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
Weikert---------	40	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
6D:							
Bland-----------	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
6E:							
Bland-----------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
7D:							
Brushy----------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
7E:							
Brushy----------	90	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
8D:							
Calvin----------	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
8E:							
Calvin----------	90	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
9D:							
Calvin----------	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
10E:							
Calvin----------	55	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rough-----------	30	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
11D:							
Carbo-----------	60	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rock outcrop----	25	Not rated		Not rated		Not rated	
11E:							
Carbo-----------	60	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rock outcrop----	25	Not rated		Not rated		Not rated	
12D:							
Carbo-----------	60	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rock outcrop----	25	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
13F:							
Culleoka--------	55	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Berks-----------	35	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
14D:							
Dekalb----------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
14E:							
Dekalb----------	85	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
15D:							
Dekalb----------	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
Rock outcrop----	15	Not rated		Not rated		Not rated	
15F:							
Dekalb----------	75	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
Rock outcrop----	15	Not rated		Not rated		Not rated	
16C:							
Frederick-------	90	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
16D:							
Frederick-------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
17C:							
Frederick-------	90	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
17D:							
Frederick-------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
17E:							
Frederick-------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
18C:							
Frederick-------	50	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
Watahala--------	35	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
18D:							
Frederick-------	50	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Watahala--------	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
19C:							
Gilpin----------	85	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
19D:							
Gilpin----------	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
20C:							
Jefferson-------	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Low strength	0.50
20D:							
Jefferson-------	90	Moderate		Moderate		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.50	Slope	1.00
						Low strength	0.50
21C:							
Lily------------	90	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
21D:							
Lily------------	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
21E:							
Lily------------	85	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
22A:							
Maurertown------	90	Slight		Slight		Poorly suited	
						Ponding	1.00
						Wetness	0.50
						Low strength	0.50
23B:							
Nicelytown------	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
23C:							
Nicelytown------	90	Moderate		Moderate		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.50	Slope	0.50
						Low strength	0.50
24B:							
Ogles-----------	90	Slight		Slight		Poorly suited	
						Flooding	1.00
						Low strength	0.50
25A:							
Ogles-----------	50	Slight		Slight		Poorly suited	
						Flooding	1.00
						Low strength	0.50
Pope------------	25	Slight		Slight		Poorly suited	
						Flooding	1.00
Philo-----------	20	Slight		Slight		Poorly suited	
						Ponding	1.00
						Flooding	1.00
26C:							
Oriskany--------	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Rock fragments	0.50
26D:							
Oriskany--------	90	Moderate		Moderate		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.50	Slope	1.00
						Rock fragments	0.50
27E:							
Oriskany--------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Rock fragments	1.00
						Slope	1.00
28A:							
Philo-----------	90	Slight		Slight		Poorly suited	
						Ponding	1.00
						Flooding	1.00
29A:							
Pope------------	90	Slight		Slight		Poorly suited	
						Flooding	1.00
30:							
Quarries, limestone------	95	Not rated		Not rated		Not rated	
31F:							
Rock outcrop----	50	Not rated		Not rated		Not rated	
Beech Grove-----	25	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Benthole--------	20	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Rock fragments	1.00
						Slope	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
32C:							
Shelocta--------	90	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
32D:							
Shelocta--------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
33B:							
Slabtown--------	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
33C:							
Slabtown--------	90	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
34B:							
Tumbling--------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
34C:							
Tumbling--------	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
34D:							
Tumbling--------	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
35C:							
Tumbling--------	90	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
35D:							
Tumbling--------	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
36C:							
Tumbling--------	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
						Rock fragments	0.50
36D:							
Tumbling--------	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Rock fragments	0.50
37:							
Udorthents------	50	Not rated		Not rated		Not rated	
Urban land------	40	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
38C:							
Watahala--------	90	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
38D:							
Watahala--------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
38E:							
Watahala--------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
38F:							
Watahala--------	90	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
39C:							
Watahala--------	90	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Rock fragments	0.50
						Low strength	0.50
39D:							
Watahala--------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
						Low strength	0.50
39E:							
Watahala--------	90	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
						Low strength	0.50
40F:							
Weikert---------	35	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
Rough-----------	30	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rock outcrop----	25	Not rated		Not rated		Not rated	
41D:							
Westmoreland----	45	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Culleoka--------	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
41E:							
Westmoreland----	45	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Culleoka--------	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
W:							
Water-----------	100	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part III

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
1B:							
Alonzville------	90	Moderately suited		Moderately suited		Moderately suited	
		Sandiness	0.50	Sandiness	0.50	Low strength	0.50
				Slope	0.50	Sandiness	0.50
2A:							
Atkins----------	90	Poorly suited		Poorly suited		Poorly suited	
		Wetness	0.75	Wetness	0.75	Wetness	1.00
3D:							
Bailegap--------	90	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
				Rock fragments	0.50		
4E:							
Bailegap--------	35	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50		
Lily------------	30	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50		
Dekalb----------	25	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
5C:							
Berks-----------	45	Moderately suited		Poorly suited		Well suited	
		Rock fragments	0.50	Rock fragments	0.75		
				Slope	0.50		
Weikert---------	40	Poorly suited		Unsuited		Well suited	
		Rock fragments	0.75	Rock fragments	1.00		
				Slope	0.50		
5D:							
Berks-----------	50	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Slope	0.50
				Rock fragments	0.75		
Weikert---------	35	Poorly suited		Unsuited		Moderately suited	
		Rock fragments	0.75	Rock fragments	1.00	Slope	0.50
				Slope	0.75		
5E:							
Berks-----------	45	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75		
Weikert---------	40	Poorly suited		Unsuited		Poorly suited	
		Rock fragments	0.75	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	1.00		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
6D:							
Bland-----------	85	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.75	Slope	0.50
6E:							
Bland-----------	90	Poorly suited		Unsuited		Moderately suited	
		Stickiness; high plasticity index	0.75	Slope	1.00	Low strength	0.50
				Stickiness; high plasticity index	0.75	Slope	0.50
7D:							
Brushy----------	90	Moderately suited		Unsuited		Moderately suited	
		Sandiness	0.50	Rock fragments	1.00	Slope	0.50
		Rock fragments	0.50	Slope	0.75		
				Sandiness	0.50		
7E:							
Brushy----------	90	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Sandiness	0.50	Rock fragments	1.00		
		Rock fragments	0.50	Sandiness	0.50		
8D:							
Calvin----------	80	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Low strength	0.50
				Rock fragments	0.75	Slope	0.50
8E:							
Calvin----------	90	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
9D:							
Calvin----------	80	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Low strength	0.50
				Rock fragments	0.75	Slope	0.50
10E:							
Calvin----------	55	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
Rough-----------	30	Unsuited		Unsuited		Poorly suited	
		Restrictive layer	1.00	Restrictive layer	1.00	Slope	1.00
		Rock fragments	0.75	Slope	1.00	Low strength	0.50
		Slope	0.50	Rock fragments	1.00		
11D:							
Carbo-----------	60	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.75	Slope	0.50
Rock outcrop----	25	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
11E:							
Carbo	60	Poorly suited		Unsuited		Poorly suited	
		Stickiness; high plasticity index	0.75	Slope	1.00	Slope	1.00
		Slope	0.50	Stickiness; high plasticity index	0.75	Low strength	0.50
Rock outcrop	25	Not rated		Not rated		Not rated	
12D:							
Carbo	60	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.75	Slope	0.50
Rock outcrop	25	Not rated		Not rated		Not rated	
13F:							
Culleoka	55	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
Berks	35	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75		
14D:							
Dekalb	90	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Rock fragments	0.50
				Rock fragments	0.75	Slope	0.50
14E:							
Dekalb	85	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
15D:							
Dekalb	75	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Rock fragments	0.50
				Rock fragments	0.75	Slope	0.50
Rock outcrop	15	Not rated		Not rated		Not rated	
15F:							
Dekalb	75	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
Rock outcrop	15	Not rated		Not rated		Not rated	
16C:							
Frederick	90	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
				Stickiness; high plasticity index	0.50		
16D:							
Frederick	90	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.50	Slope	0.50

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
17C:							
Frederick-------	90	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
17D:							
Frederick-------	90	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
17E:							
Frederick-------	90	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
18C:							
Frederick-------	50	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
Watahala--------	35	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Low strength	0.50
				Slope	0.50		
18D:							
Frederick-------	50	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
Watahala--------	35	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
19C:							
Gilpin----------	85	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
19D:							
Gilpin----------	85	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
20C:							
Jefferson-------	90	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Low strength	0.50
				Slope	0.50		
20D:							
Jefferson-------	90	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
21C:							
Lily------------	90	Well suited		Moderately suited		Well suited	
				Slope	0.50		
				Rock fragments	0.50		
21D:							
Lily------------	85	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
				Rock fragments	0.50		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
21E:							
Lily	85	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50		
22A:							
Maurertown	90	Poorly suited		Poorly suited		Poorly suited	
		Wetness	0.75	Wetness	0.75	Wetness	1.00
						Low strength	0.50
23B:							
Nicelytown	90	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
23C:							
Nicelytown	90	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
24B:							
Ogles	90	Moderately suited		Unsuited		Moderately suited	
		Rock fragments	0.50	Rock fragments	1.00	Low strength	0.50
25A:							
Ogles	50	Moderately suited		Unsuited		Moderately suited	
		Rock fragments	0.50	Rock fragments	1.00	Low strength	0.50
Pope	25	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
Philo	20	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
26C:							
Oriskany	90	Moderately suited		Unsuited		Moderately suited	
		Rock fragments	0.50	Rock fragments	1.00	Rock fragments	0.50
				Slope	0.50		
26D:							
Oriskany	90	Moderately suited		Unsuited		Moderately suited	
		Rock fragments	0.50	Rock fragments	1.00	Rock fragments	0.50
				Slope	0.75	Slope	0.50
27E:							
Oriskany	90	Unsuited		Unsuited		Poorly suited	
		Rock fragments	1.00	Rock fragments	1.00	Rock fragments	1.00
		Slope	0.50	Slope	1.00	Slope	0.50
28A:							
Philo	90	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
29A:							
Pope	90	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
30:							
Quarries, limestone	95	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
31F:							
Rock outcrop----	50	Not rated		Not rated		Not rated	
Beech Grove-----	25	Unsuited		Unsuited		Poorly suited	
		Restrictive layer	1.00	Restrictive layer	1.00	Slope	1.00
		Slope	0.75	Slope	1.00	Low strength	0.50
				Rock fragments	0.50		
Benthole--------	20	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Rock fragments	1.00
		Rock fragments	0.50	Rock fragments	1.00	Slope	1.00
						Low strength	0.50
32C:							
Shelocta--------	90	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
32D:							
Shelocta--------	90	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
33B:							
Slabtown--------	90	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
33C:							
Slabtown--------	90	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
34B:							
Tumbling--------	80	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Low strength	0.50
				Slope	0.50		
34C:							
Tumbling--------	85	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Low strength	0.50
				Slope	0.50		
34D:							
Tumbling--------	80	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
35C:							
Tumbling--------	90	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Low strength	0.50
				Slope	0.50		
35D:							
Tumbling--------	85	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
36C:							
Tumbling--------	80	Moderately suited		Moderately suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.50	Low strength	0.50
				Slope	0.50	Rock fragments	0.50

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
36D:							
Tumbling--------	80	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Rock fragments	0.50
						Slope	0.50
37:							
Udorthents------	50	Not rated		Not rated		Not rated	
Urban land------	40	Not rated		Not rated		Not rated	
38C:							
Watahala--------	90	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Low strength	0.50
				Slope	0.50		
38D:							
Watahala--------	90	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
38E:							
Watahala--------	90	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
38F:							
Watahala--------	90	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
39C:							
Watahala--------	90	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
				Slope	0.50	Low strength	0.50
39D:							
Watahala--------	90	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Rock fragments	0.50
				Rock fragments	0.75	Low strength	0.50
						Slope	0.50
39E:							
Watahala--------	90	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
						Low strength	0.50
40F:							
Weikert---------	35	Poorly suited		Unsuited		Poorly suited	
		Slope	0.75	Slope	1.00	Slope	1.00
		Rock fragments	0.75	Rock fragments	1.00		
Rough-----------	30	Unsuited		Unsuited		Poorly suited	
		Restrictive layer	1.00	Restrictive layer	1.00	Slope	1.00
		Slope	0.75	Slope	1.00	Low strength	0.50
		Rock fragments	0.75	Rock fragments	1.00		
Rock outcrop----	25	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
41D:							
Westmoreland----	45	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
Culleoka--------	40	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
41E:							
Westmoreland----	45	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
						Slope	0.50
Culleoka--------	40	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
W:							
Water-----------	100	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part IV

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
1B:					
Alonzville	90	Well suited		Well suited	
2A:					
Atkins	90	Unsuited		Unsuited	
		Wetness	0.75	Wetness	1.00
3D:					
Bailegap	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
4E:					
Bailegap	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Lily	30	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
				Restrictive layer	0.50
Dekalb	25	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
				Restrictive layer	0.50
5C:					
Berks	45	Poorly suited		Unsuited	
		Rock fragments	0.50	Restrictive layer	1.00
Weikert	40	Poorly suited		Unsuited	
		Rock fragments	0.50	Restrictive layer	1.00
5D:					
Berks	50	Poorly suited		Unsuited	
		Slope	0.50	Restrictive layer	1.00
		Rock fragments	0.50	Slope	0.50
Weikert	35	Poorly suited		Unsuited	
		Slope	0.50	Restrictive layer	1.00
		Rock fragments	0.50	Slope	0.50
5E:					
Berks	45	Unsuited		Unsuited	
		Slope	1.00	Restrictive layer	1.00
		Rock fragments	0.50	Slope	1.00
Weikert	40	Unsuited		Unsuited	
		Slope	1.00	Restrictive layer	1.00
		Rock fragments	0.50	Slope	1.00

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
6D:					
Bland	85	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Stickiness; high plasticity index	0.50		
6E:					
Bland	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Stickiness; high plasticity index	0.50		
7D:					
Brushy	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Restrictive layer	0.50
7E:					
Brushy	90	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Restrictive layer	0.50
8D:					
Calvin	80	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Restrictive layer	0.50
8E:					
Calvin	90	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Restrictive layer	0.50
9D:					
Calvin	80	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Restrictive layer	0.50
10E:					
Calvin	55	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Restrictive layer	0.50
Rough	30	Unsuited		Unsuited	
		Restrictive layer	1.00	Restrictive layer	1.00
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
11D:					
Carbo	60	Poorly suited		Poorly suited	
		Stickiness; high plasticity index	0.50	Slope	0.50
				Restrictive layer	0.50
		Slope	0.50		
Rock outcrop	25	Not rated		Not rated	
11E:					
Carbo	60	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Stickiness; high plasticity index	0.50	Restrictive layer	0.50

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
11E:					
Rock outcrop	25	Not rated		Not rated	
12D:					
Carbo	60	Poorly suited		Poorly suited	
		Stickiness; high plasticity index	0.50	Slope	0.50
				Restrictive layer	0.50
		Slope	0.50		
Rock outcrop	25	Not rated		Not rated	
13F:					
Culleoka	55	Unsuited		Unsuited	
		Slope	1.00	Restrictive layer	1.00
				Slope	1.00
Berks	35	Unsuited		Unsuited	
		Slope	1.00	Restrictive layer	1.00
		Rock fragments	0.50	Slope	1.00
14D:					
Dekalb	90	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
		Slope	0.50	Slope	0.50
				Restrictive layer	0.50
14E:					
Dekalb	85	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
				Restrictive layer	0.50
15D:					
Dekalb	75	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
		Slope	0.50	Slope	0.50
				Restrictive layer	0.50
Rock outcrop	15	Not rated		Not rated	
15F:					
Dekalb	75	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
				Restrictive layer	0.50
Rock outcrop	15	Not rated		Not rated	
16C:					
Frederick	90	Well suited		Well suited	
16D:					
Frederick	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
17C:					
Frederick	90	Well suited		Well suited	
17D:					
Frederick	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
17E:					
Frederick-----------	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
18C:					
Frederick-----------	50	Well suited		Well suited	
Watahala------------	35	Well suited		Well suited	
18D:					
Frederick-----------	50	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Watahala------------	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
19C:					
Gilpin--------------	85	Well suited		Well suited	
19D:					
Gilpin--------------	85	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
20C:					
Jefferson-----------	90	Well suited		Well suited	
20D:					
Jefferson-----------	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
21C:					
Lily----------------	90	Well suited		Poorly suited	
				Restrictive layer	0.50
21D:					
Lily----------------	85	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
				Restrictive layer	0.50
21E:					
Lily----------------	85	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
				Restrictive layer	0.50
22A:					
Maurertown----------	90	Unsuited		Unsuited	
		Wetness	0.75	Wetness	1.00
23B:					
Nicelytown----------	90	Well suited		Well suited	
23C:					
Nicelytown----------	90	Well suited		Well suited	
24B:					
Ogles---------------	90	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
25A:					
Ogles	50	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
Pope	25	Well suited		Well suited	
Philo	20	Well suited		Well suited	
26C:					
Oriskany	90	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
26D:					
Oriskany	90	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
		Slope	0.50	Slope	0.50
27E:					
Oriskany	90	Unsuited		Unsuited	
		Rock fragments	1.00	Rock fragments	1.00
		Slope	0.50	Slope	0.50
28A:					
Philo	90	Well suited		Well suited	
29A:					
Pope	90	Well suited		Well suited	
30:					
Quarries, limestone	95	Not rated		Not rated	
31F:					
Rock outcrop	50	Not rated		Not rated	
Beech Grove	25	Unsuited		Unsuited	
		Restrictive layer	1.00	Restrictive layer	1.00
		Slope	1.00	Slope	1.00
Benthole	20	Unsuited		Unsuited	
		Rock fragments	1.00	Slope	1.00
		Slope	1.00	Rock fragments	0.50
32C:					
Shelocta	90	Well suited		Well suited	
32D:					
Shelocta	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
33B:					
Slabtown	90	Well suited		Well suited	
33C:					
Slabtown	90	Well suited		Well suited	
34B:					
Tumbling	80	Well suited		Well suited	
34C:					
Tumbling	85	Well suited		Well suited	

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
34D:					
Tumbling-----------	80	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
35C:					
Tumbling-----------	90	Well suited		Well suited	
35D:					
Tumbling-----------	85	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
36C:					
Tumbling-----------	80	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
36D:					
Tumbling-----------	80	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Rock fragments	0.50
37:					
Udorthents----------	50	Not rated		Not rated	
Urban land----------	40	Not rated		Not rated	
38C:					
Watahala-----------	90	Well suited		Well suited	
38D:					
Watahala-----------	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
38E:					
Watahala-----------	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
38F:					
Watahala-----------	90	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
39C:					
Watahala-----------	90	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
39D:					
Watahala-----------	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Rock fragments	0.50
39E:					
Watahala-----------	90	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
40F:					
Weikert------------	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Restrictive layer	1.00

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
40F:					
Rough----------------	30	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Restrictive layer	1.00	Restrictive layer	1.00
		Rock fragments	0.50		
Rock outcrop---------	25	Not rated		Not rated	
41D:					
Westmoreland---------	45	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Culleoka-------------	40	Poorly suited		Unsuited	
		Slope	0.50	Restrictive layer	1.00
				Slope	0.50
41E:					
Westmoreland---------	45	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Culleoka-------------	40	Poorly suited		Unsuited	
		Slope	0.50	Restrictive layer	1.00
				Slope	0.50
W:					
Water----------------	100	Not rated		Not rated	

Table 9.—Forestland Management, Part V

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
1B:					
Alonzville	90	Moderate		Low	
		Texture/rock fragments	0.50		
2A:					
Atkins	90	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
3D:					
Bailegap	90	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
4E:					
Bailegap	35	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
Lily	30	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Dekalb	25	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
5C:					
Berks	45	Moderate		Low	
		Texture/rock fragments	0.50		
Weikert	40	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
5D:					
Berks	50	Moderate		Low	
		Texture/rock fragments	0.50		
Weikert	35	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
5E:					
Berks	45	High		Low	
		Texture/slope/ rock fragments	1.00		
Weikert	40	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
6D:					
Bland	85	Low		Low	
		Texture/surface depth/rock fragments	0.10		
6E:					
Bland	90	Moderate		Low	
		Texture/slope/ surface depth/ rock fragments	0.50		
7D:					
Brushy	90	High		Moderate	
		Texture/rock fragments	1.00	Soil reaction	0.50
7E:					
Brushy	90	Low		Moderate	
				Soil reaction	0.50
8D:					
Calvin	80	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
8E:					
Calvin	90	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
9D:					
Calvin	80	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
10E:					
Calvin	55	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
Rough	30	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
11D:					
Carbo---------------	60	Moderate		Low	
		Texture/rock fragments	0.50		
Rock outcrop--------	25	Not rated		Not rated	
11E:					
Carbo---------------	60	High		Low	
		Texture/slope/ rock fragments	1.00		
Rock outcrop--------	25	Not rated		Not rated	
12D:					
Carbo---------------	60	Moderate		Low	
		Texture/rock fragments	0.50		
Rock outcrop--------	25	Not rated		Not rated	
13F:					
Culleoka------------	55	Moderate		Low	
		Texture/slope/ surface depth/ rock fragments	0.50		
Berks---------------	35	High		Low	
		Texture/slope/ rock fragments	1.00		
14D:					
Dekalb--------------	90	Moderate		Low	
		Texture/rock fragments	0.50		
14E:					
Dekalb--------------	85	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
15D:					
Dekalb--------------	75	Moderate		Low	
		Texture/rock fragments	0.50		
Rock outcrop--------	15	Not rated		Not rated	
15F:					
Dekalb--------------	75	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Rock outcrop--------	15	Not rated		Not rated	
16C:					
Frederick-----------	90	Moderate		Low	
		Texture/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
16D:					
Frederick	90	Moderate		Low	
		Texture/rock fragments	0.50		
17C:					
Frederick	90	Moderate		Low	
		Texture/rock fragments	0.50		
17D:					
Frederick	90	Moderate		Low	
		Texture/rock fragments	0.50		
17E:					
Frederick	90	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
18C:					
Frederick	50	Moderate		Low	
		Texture/rock fragments	0.50		
Watahala	35	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
18D:					
Frederick	50	Moderate		Low	
		Texture/rock fragments	0.50		
Watahala	35	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
19C:					
Gilpin	85	Moderate		Low	
		Texture/rock fragments	0.50		
19D:					
Gilpin	85	Moderate		Low	
		Texture/rock fragments	0.50		
20C:					
Jefferson	90	Moderate		Low	
		Texture/rock fragments	0.50		
20D:					
Jefferson	90	Moderate		Low	
		Texture/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
21C:					
Lily----------------	90	Moderate		Low	
		Texture/rock fragments	0.50		
21D:					
Lily----------------	85	Moderate		Low	
		Texture/rock fragments	0.50		
21E:					
Lily----------------	85	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
22A:					
Maurertown----------	90	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
23B:					
Nicelytown----------	90	Moderate		Low	
		Texture/rock fragments	0.50		
23C:					
Nicelytown----------	90	Moderate		Low	
		Texture/rock fragments	0.50		
24B:					
Ogles---------------	90	Low		Low	
		Texture/rock fragments	0.10		
25A:					
Ogles---------------	50	Low		Low	
		Texture/rock fragments	0.10		
Pope----------------	25	Low		Low	
		Texture/rock fragments	0.10		
Philo---------------	20	Low		Low	
		Texture/rock fragments	0.10		
26C:					
Oriskany------------	90	Moderate		Low	
		Texture/rock fragments	0.50		
26D:					
Oriskany------------	90	Moderate		Low	
		Texture/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
27E:					
Oriskany	90	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
28A:					
Philo	90	Low		Low	
		Texture/rock fragments	0.10		
29A:					
Pope	90	Low		Low	
		Texture/rock fragments	0.10		
30:					
Quarries, limestone	95	Not rated		Not rated	
31F:					
Rock outcrop	50	Not rated		Not rated	
Beech Grove	25	Low		Low	
		Texture/slope/ rock fragments	0.10		
Benthole	20	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
32C:					
Shelocta	90	Moderate		Low	
		Texture/rock fragments	0.50		
32D:					
Shelocta	90	Moderate		Low	
		Texture/rock fragments	0.50		
33B:					
Slabtown	90	Low		Low	
		Texture/rock fragments	0.10		
33C:					
Slabtown	90	Low		Low	
		Texture/rock fragments	0.10		
34B:					
Tumbling	80	Moderate		Low	
		Texture/rock fragments	0.50		
34C:					
Tumbling	85	Moderate		Low	
		Texture/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
34D:					
Tumbling-----------	80	Moderate		Low	
		Texture/rock fragments	0.50		
35C:					
Tumbling-----------	90	Moderate		Low	
		Texture/rock fragments	0.50		
35D:					
Tumbling-----------	85	Moderate		Low	
		Texture/rock fragments	0.50		
36C:					
Tumbling-----------	80	Moderate		Low	
		Texture/rock fragments	0.50		
36D:					
Tumbling-----------	80	Moderate		Low	
		Texture/rock fragments	0.50		
37:					
Udorthents----------	50	Not rated		Not rated	
Urban land----------	40	Not rated		Not rated	
38C:					
Watahala-----------	90	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
38D:					
Watahala-----------	90	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
38E:					
Watahala-----------	90	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
38F:					
Watahala-----------	90	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
39C:					
Watahala-----------	90	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Potential for damage to soil by fire: Value	Potential for seedling mortality: Rating class and limiting features	Potential for seedling mortality: Value
39D:					
Watahala	90	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
39E:					
Watahala	90	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
40F:					
Weikert	35	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
Rough	30	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
Rock outcrop	25	Not rated		Not rated	
41D:					
Westmoreland	45	Low		Low	
		Texture/rock fragments	0.10		
Culleoka	40	Low		Low	
		Texture/surface depth/rock fragments	0.10		
41E:					
Westmoreland	45	Low		Low	
		Texture/slope/ rock fragments	0.10		
Culleoka	40	Moderate		Low	
		Texture/slope/ surface depth/ rock fragments	0.50		
W:					
Water	100	Not rated		Not rated	

Table 10.—Recreational Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1B:							
Alonzville------	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00			Slope	0.97
2A:							
Atkins----------	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Ponding	1.00	Slow water movement	0.96	Ponding	1.00
3D:							
Bailegap--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Large stones content	0.76
4E:							
Bailegap--------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Large stones content	0.76
Lily------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.47	Large stones content	0.47	Large stones content	0.47
						Depth to bedrock	0.46
Dekalb----------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Gravel content	1.00
		Gravel content	0.01	Gravel content	0.01	Large stones content	1.00
5C:							
Berks-----------	45	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.94	Gravel content	0.94	Slope	1.00
		Slope	0.63	Slope	0.63	Gravel content	1.00
						Depth to bedrock	0.65
Weikert---------	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to bedrock	1.00
		Gravel content	0.57	Gravel content	0.57	Gravel content	1.00
5D:							
Berks-----------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.94	Gravel content	0.94	Gravel content	1.00
						Depth to bedrock	0.65

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
5D:							
Weikert---------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.57	Gravel content	0.57	Gravel content	1.00
5E:							
Berks-----------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.94	Gravel content	0.94	Gravel content	1.00
						Depth to bedrock	0.65
Weikert---------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.57	Gravel content	0.57	Gravel content	1.00
6D:							
Bland-----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.26	Slow water movement	0.26	Slow water movement	0.26
						Depth to bedrock	0.06
6E:							
Bland-----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.26	Slow water movement	0.26	Slow water movement	0.26
						Depth to bedrock	0.06
7D:							
Brushy----------	90	Very limited		Very limited		Very limited	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Large stones content	0.76
7E:							
Brushy----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	1.00	Gravel content	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Large stones content	0.76
8D:							
Calvin----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.04	Gravel content	0.04	Gravel content	1.00
						Depth to bedrock	0.71
8E:							
Calvin----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.04	Gravel content	0.04	Gravel content	1.00
						Depth to bedrock	0.71

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
9D:							
Calvin----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.53	Large stones content	0.53	Gravel content	1.00
						Depth to bedrock	0.71
		Gravel content	0.04	Gravel content	0.04		
10E:							
Calvin----------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.53	Large stones content	0.53	Gravel content	1.00
						Depth to bedrock	0.71
		Gravel content	0.04	Gravel content	0.04		
Rough-----------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Large stones content	0.53	Large stones content	0.53	Gravel content	1.00
11D:							
Carbo-----------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Depth to bedrock	0.90
Rock outcrop----	25	Not rated		Not rated		Not rated	
11E:							
Carbo-----------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Depth to bedrock	0.90
Rock outcrop----	25	Not rated		Not rated		Not rated	
12D:							
Carbo-----------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Depth to bedrock	0.90
Rock outcrop----	25	Not rated		Not rated		Not rated	
13F:							
Culleoka--------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.32	Gravel content	0.32	Gravel content	1.00
						Depth to bedrock	0.71
Berks-----------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.94	Gravel content	0.94	Gravel content	1.00
						Depth to bedrock	0.65

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
14D:							
Dekalb----------	90	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Large stones content	1.00
		Slope	1.00	Slope	1.00		
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
14E:							
Dekalb----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
15D:							
Dekalb----------	75	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Large stones content	1.00
		Slope	1.00	Slope	1.00		
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
Rock outcrop----	15	Not rated		Not rated		Not rated	
15F:							
Dekalb----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
Rock outcrop----	15	Not rated		Not rated		Not rated	
16C:							
Frederick-------	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
16D:							
Frederick-------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
17C:							
Frederick-------	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Gravel content	1.00
		Gravel content	0.01	Gravel content	0.01	Slope	1.00
17D:							
Frederick-------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.01	Gravel content	0.01	Slope	1.00
17E:							
Frederick-------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.01	Gravel content	0.01	Slope	1.00
18C:							
Frederick-------	50	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Gravel content	1.00
		Gravel content	0.01	Gravel content	0.01	Slope	1.00

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
18C:							
Watahala--------	35	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.68	Gravel content	0.68	Slope	1.00
		Slope	0.37	Slope	0.37	Gravel content	1.00
18D:							
Frederick-------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.01	Gravel content	0.01	Slope	1.00
Watahala--------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00
19C:							
Gilpin----------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
						Depth to bedrock	0.23
19D:							
Gilpin----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.23
20C:							
Jefferson-------	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
						Gravel content	0.44
						Large stones content	0.32
20D:							
Jefferson-------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.44
						Large stones content	0.32
21C:							
Lily------------	90	Somewhat limited		Somewhat limited		Very limited	
		Large stones content	0.76	Large stones content	0.76	Slope	1.00
		Slope	0.37	Slope	0.37	Large stones content	0.76
						Depth to bedrock	0.46
21D:							
Lily------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Large stones content	0.76
						Depth to bedrock	0.46
21E:							
Lily------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Large stones content	0.76
						Depth to bedrock	0.46

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
22A:							
Maurertown------	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00				
23B:							
Nicelytown------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.98	Depth to saturated zone	0.75	Depth to saturated zone	0.98
		Slow water movement	0.60	Slow water movement	0.60	Slope	0.88
						Slow water movement	0.60
23C:							
Nicelytown------	90	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.98	Depth to saturated zone	0.75	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.98
		Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
24B:							
Ogles-----------	90	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Large stones content	0.77	Large stones content	1.00
		Large stones content	0.77	Flooding	0.40	Flooding	1.00
						Slope	0.12
25A:							
Ogles-----------	50	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Large stones content	0.77	Large stones content	1.00
		Large stones content	0.77			Flooding	0.60
Pope------------	25	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
Philo-----------	20	Very limited		Very limited		Very limited	
		Flooding	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	0.03	Flooding	0.60
		Depth to saturated zone	0.07			Depth to saturated zone	0.07
26C:							
Oriskany--------	90	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Gravel content	1.00
		Gravel content	0.68	Gravel content	0.68	Slope	1.00
		Slope	0.63	Slope	0.63	Large stones content	1.00
26D:							
Oriskany--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Gravel content	0.68	Gravel content	0.68	Large stones content	1.00

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
27E:							
Oriskany	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Gravel content	0.68	Gravel content	0.68	Large stones content	1.00
28A:							
Philo	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	0.03	Flooding	0.60
		Depth to saturated zone	0.07			Depth to saturated zone	0.07
29A:							
Pope	90	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
30:							
Quarries, limestone	95	Not rated		Not rated		Not rated	
31F:							
Rock outcrop	50	Not rated		Not rated		Not rated	
Beech Grove	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Large stones content	0.04	Large stones content	0.04	Large stones content	0.05
Benthole	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Gravel content	0.16	Gravel content	0.16	Gravel content	1.00
32C:							
Shelocta	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
32D:							
Shelocta	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
33B:							
Slabtown	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.07	Depth to saturated zone	0.03	Slope	0.88
						Gravel content	0.22
						Depth to saturated zone	0.07
33C:							
Slabtown	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
		Depth to saturated zone	0.07	Depth to saturated zone	0.03	Gravel content	0.22
						Depth to saturated zone	0.07

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
34B:							
Tumbling--------	80	Not limited		Not limited		Somewhat limited	
						Slope	0.88
						Large stones content	0.08
34C:							
Tumbling--------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
						Large stones content	0.08
34D:							
Tumbling--------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Large stones content	0.08
35C:							
Tumbling--------	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
						Large stones content	0.08
35D:							
Tumbling--------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Large stones content	0.08
36C:							
Tumbling--------	80	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	0.37	Slope	0.37	Large stones content	1.00
36D:							
Tumbling--------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
37:							
Udorthents------	50	Not rated		Not rated		Not rated	
Urban land------	40	Not rated		Not rated		Not rated	
38C:							
Watahala--------	90	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.68	Gravel content	0.68	Slope	1.00
		Slope	0.37	Slope	0.37	Gravel content	1.00
38D:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
38E:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00
38F:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00
39C:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Gravel content	0.68	Gravel content	0.68	Large stones content	1.00
		Slope	0.37	Slope	0.37	Gravel content	1.00
39D:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00
39E:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00
40F:							
Weikert---------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.57	Gravel content	0.57	Gravel content	1.00
Rough-----------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.13	Gravel content	0.13	Gravel content	1.00
Rock outcrop----	25	Not rated		Not rated		Not rated	
41D:							
Westmoreland----	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.76
Culleoka--------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.32	Gravel content	0.32	Gravel content	1.00
						Depth to bedrock	0.71
41E:							
Westmoreland----	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.76

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
41E:							
Culleoka--------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.32	Gravel content	0.32	Gravel content	1.00
						Depth to bedrock	0.71
W:							
Water-----------	100	Not rated		Not rated		Not rated	

Table 10.—Recreational Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
1B:							
Alonzville------	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
2A:							
Atkins----------	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
3D:							
Bailegap--------	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.76	Slope	1.00
		Large stones content	0.76				
4E:							
Bailegap--------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76		
Lily------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.47	Large stones content	0.47	Depth to bedrock	0.46
						Droughty	0.01
Dekalb----------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Droughty	0.99
						Depth to bedrock	0.35
5C:							
Berks-----------	45	Not limited		Not limited		Somewhat limited	
						Gravel content	0.94
						Depth to bedrock	0.65
						Slope	0.63
Weikert---------	40	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	1.00
						Slope	0.63
5D:							
Berks-----------	50	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
						Gravel content	0.94
						Depth to bedrock	0.65
Weikert---------	35	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
5E:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.94
						Depth to bedrock	0.65
Weikert	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
6D:							
Bland	85	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to bedrock	0.06
6E:							
Bland	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
						Depth to bedrock	0.06
7D:							
Brushy	90	Very limited		Very limited		Very limited	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	1.00	Large stones content	0.76	Droughty	1.00
		Large stones content	0.76			Slope	1.00
7E:							
Brushy	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Large stones content	0.76	Large stones content	0.76	Droughty	1.00
8D:							
Calvin	80	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
						Depth to bedrock	0.71
						Droughty	0.32
8E:							
Calvin	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.71
						Droughty	0.32
9D:							
Calvin	80	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.53	Slope	1.00
		Large stones content	0.53			Depth to bedrock	0.71
						Droughty	0.32
10E:							
Calvin	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.53	Large stones content	0.53	Depth to bedrock	0.71
						Droughty	0.32

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
10E:							
Rough-----------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Large stones content	0.53	Large stones content	0.53	Slope	1.00
						Droughty	1.00
11D:							
Carbo-----------	60	Somewhat limited		Not limited		Very limited	
		Slope	0.82			Slope	1.00
						Depth to bedrock	0.90
						Droughty	0.44
Rock outcrop----	25	Not rated		Not rated		Not rated	
11E:							
Carbo-----------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.90
						Droughty	0.44
Rock outcrop----	25	Not rated		Not rated		Not rated	
12D:							
Carbo-----------	60	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to bedrock	0.90
						Droughty	0.44
Rock outcrop----	25	Not rated		Not rated		Not rated	
13F:							
Culleoka--------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.71
						Gravel content	0.32
Berks-----------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.94
						Depth to bedrock	0.65
14D:							
Dekalb----------	90	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Droughty	0.99
		Slope	1.00			Depth to bedrock	0.35
14E:							
Dekalb----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Slope	1.00
		Large stones content	1.00			Droughty	0.99
				Slope	1.00	Depth to bedrock	0.35
15D:							
Dekalb----------	75	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Droughty	0.99
		Slope	0.82			Depth to bedrock	0.35
Rock outcrop----	15	Not rated		Not rated		Not rated	

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
15F:							
Dekalb----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Slope	1.00
		Large stones content	1.00	Slope	1.00	Droughty	0.99
						Depth to bedrock	0.35
Rock outcrop----	15	Not rated		Not rated		Not rated	
16C:							
Frederick-------	90	Not limited		Not limited		Somewhat limited	
						Slope	0.37
16D:							
Frederick-------	90	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
17C:							
Frederick-------	90	Not limited		Not limited		Somewhat limited	
						Slope	0.37
						Gravel content	0.01
17D:							
Frederick-------	90	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Gravel content	0.01
17E:							
Frederick-------	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
						Gravel content	0.01
18C:							
Frederick-------	50	Not limited		Not limited		Somewhat limited	
						Slope	0.37
						Gravel content	0.01
Watahala--------	35	Not limited		Not limited		Somewhat limited	
						Gravel content	0.68
						Slope	0.37
						Droughty	0.04
18D:							
Frederick-------	50	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Gravel content	0.01
Watahala--------	35	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Gravel content	0.68
						Droughty	0.04
19C:							
Gilpin----------	85	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.63
						Depth to bedrock	0.23
19D:							
Gilpin----------	85	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.50			Depth to bedrock	0.23

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
20C:							
Jefferson	90	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Large stones content	0.32
20D:							
Jefferson	90	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Large stones content	0.32
21C:							
Lily	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Large stones content	0.76	Large stones content	0.76	Depth to bedrock	0.46
						Slope	0.37
						Droughty	0.01
21D:							
Lily	85	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.76	Slope	1.00
		Large stones content	0.76			Depth to bedrock	0.46
						Droughty	0.01
21E:							
Lily	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Depth to bedrock	0.46
						Droughty	0.01
22A:							
Maurertown	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
23B:							
Nicelytown	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
23C:							
Nicelytown	90	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	0.75
		Depth to saturated zone	0.44	Depth to saturated zone	0.44	Slope	0.63
24B:							
Ogles	90	Somewhat limited		Somewhat limited		Very limited	
		Large stones content	0.77	Large stones content	0.77	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Large stones content	1.00
25A:							
Ogles	50	Somewhat limited		Somewhat limited		Very limited	
		Large stones content	0.77	Large stones content	0.77	Large stones content	1.00
						Flooding	0.60

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
25A:							
Pope------------	25	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
						Droughty	0.01
Philo-----------	20	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
						Flooding	0.60
						Depth to saturated zone	0.03
26C:							
Oriskany--------	90	Very limited		Very limited		Somewhat limited	
		Large stones content	1.00	Large stones content	1.00	Gravel content	0.68
						Slope	0.63
26D:							
Oriskany--------	90	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00			Gravel content	0.68
27E:							
Oriskany--------	90	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	0.78	Gravel content	0.68
28A:							
Philo-----------	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
						Flooding	0.60
						Depth to saturated zone	0.03
29A:							
Pope------------	90	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
						Droughty	0.01
30:							
Quarries, limestone------	95	Not rated		Not rated		Not rated	
31F:							
Rock outcrop----	50	Not rated		Not rated		Not rated	
Beech Grove-----	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Large stones content	0.04	Large stones content	0.04	Slope	1.00
						Droughty	1.00
Benthole--------	20	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Slope	1.00
		Large stones content	1.00	Slope	1.00	Droughty	0.18
						Gravel content	0.16
32C:							
Shelocta--------	90	Not limited		Not limited		Somewhat limited	
						Slope	0.63

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
32D:							
Shelocta--------	90	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
33B:							
Slabtown--------	90	Not limited		Not limited		Somewhat limited	
						Depth to saturated zone	0.03
33C:							
Slabtown--------	90	Not limited		Not limited		Somewhat limited	
						Slope	0.37
						Depth to saturated zone	0.03
34B:							
Tumbling--------	80	Not limited		Not limited		Somewhat limited	
						Large stones content	0.08
34C:							
Tumbling--------	85	Not limited		Not limited		Somewhat limited	
						Slope	0.37
						Large stones content	0.08
34D:							
Tumbling--------	80	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Large stones content	0.08
35C:							
Tumbling--------	90	Not limited		Not limited		Somewhat limited	
						Slope	0.37
						Large stones content	0.08
35D:							
Tumbling--------	85	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Large stones content	0.08
36C:							
Tumbling--------	80	Very limited		Very limited		Somewhat limited	
		Large stones content	1.00	Large stones content	1.00	Slope	0.37
						Large stones content	0.08
36D:							
Tumbling--------	80	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00			Large stones content	0.08
37:							
Udorthents------	50	Not rated		Not rated		Not rated	
Urban land------	40	Not rated		Not rated		Not rated	

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
38C:							
Watahala--------	90	Not limited		Not limited		Somewhat limited	
						Gravel content	0.68
						Slope	0.37
						Droughty	0.04
38D:							
Watahala--------	90	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Gravel content	0.68
						Droughty	0.04
38E:							
Watahala--------	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
						Gravel content	0.68
						Droughty	0.04
38F:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.68
						Droughty	0.04
39C:							
Watahala--------	90	Very limited		Very limited		Somewhat limited	
		Large stones content	1.00	Large stones content	1.00	Gravel content	0.68
						Slope	0.37
						Droughty	0.04
39D:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Gravel content	0.68
		Slope	1.00			Droughty	0.04
39E:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Slope	1.00
		Large stones content	1.00			Gravel content	0.68
				Slope	1.00	Droughty	0.04
40F:							
Weikert---------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
Rough-----------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
Rock outcrop----	25	Not rated		Not rated		Not rated	
41D:							
Westmoreland----	45	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
41D:							
Culleoka--------	40	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to bedrock	0.71
						Gravel content	0.32
41E:							
Westmoreland----	45	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
Culleoka--------	40	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
						Depth to bedrock	0.71
						Gravel content	0.32
W:							
Water-----------	100	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
1B:							
Alonzville	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
						Slope	0.28
2A:							
Atkins	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
3D:							
Bailegap	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.77		
4E:							
Bailegap	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.77		
Lily	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46
Dekalb	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.49	Depth to hard bedrock	1.00	Large stones content	0.49
		Depth to hard bedrock	0.35	Large stones content	0.49	Depth to hard bedrock	0.35
5C:							
Berks	45	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	0.64
Weikert	40	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	1.00
5D:							
Berks	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
5D:							
Weikert----------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
5E:							
Berks------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
Weikert----------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
6D:							
Bland------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.78	Depth to hard bedrock	1.00	Shrink-swell	0.78
		Depth to hard bedrock	0.06	Shrink-swell	0.78	Depth to hard bedrock	0.06
6E:							
Bland------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.78	Depth to hard bedrock	1.00	Shrink-swell	0.78
		Depth to hard bedrock	0.06	Shrink-swell	0.78	Depth to hard bedrock	0.06
7D:							
Brushy-----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.15	Slope	1.00	Depth to hard bedrock	0.15
7E:							
Brushy-----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.15	Depth to hard bedrock	1.00	Depth to hard bedrock	0.15
8D:							
Calvin-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Depth to hard bedrock	1.00	Depth to hard bedrock	0.71
8E:							
Calvin-----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Depth to hard bedrock	1.00	Depth to hard bedrock	0.71
9D:							
Calvin-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Depth to hard bedrock	1.00	Depth to hard bedrock	0.71

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
10E:							
Calvin----------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Depth to hard bedrock	1.00	Depth to hard bedrock	0.71
Rough-----------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Large stones content	0.03	Large stones content	0.03	Large stones content	0.03
11D:							
Carbo-----------	60	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Slope	1.00
		Slope	1.00	Depth to hard bedrock	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.90	Slope	1.00	Depth to hard bedrock	0.90
Rock outcrop----	25	Not rated		Not rated		Not rated	
11E:							
Carbo-----------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.90	Depth to hard bedrock	1.00	Depth to hard bedrock	0.90
Rock outcrop----	25	Not rated		Not rated		Not rated	
12D:							
Carbo-----------	60	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Slope	1.00
		Slope	1.00	Depth to hard bedrock	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.90	Slope	1.00	Depth to hard bedrock	0.90
Rock outcrop----	25	Not rated		Not rated		Not rated	
13F:							
Culleoka--------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Depth to hard bedrock	1.00	Depth to hard bedrock	0.71
Berks-----------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
14D:							
Dekalb----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Large stones content	0.49	Slope	1.00	Large stones content	0.49
		Depth to hard bedrock	0.35	Large stones content	0.49	Depth to hard bedrock	0.35

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
14E:							
Dekalb	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.49	Depth to hard bedrock	1.00	Large stones content	0.49
		Depth to hard bedrock	0.35	Large stones content	0.49	Depth to hard bedrock	0.35
15D:							
Dekalb	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Large stones content	0.49	Slope	1.00	Large stones content	0.49
		Depth to hard bedrock	0.35	Large stones content	0.49	Depth to hard bedrock	0.35
Rock outcrop	15	Not rated		Not rated		Not rated	
15F:							
Dekalb	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.49	Depth to hard bedrock	1.00	Large stones content	0.49
		Depth to hard bedrock	0.35	Large stones content	0.49	Depth to hard bedrock	0.35
Rock outcrop	15	Not rated		Not rated		Not rated	
16C:							
Frederick	90	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.62	Shrink-swell	0.62	Slope	1.00
		Slope	0.37	Slope	0.37	Shrink-swell	0.62
16D:							
Frederick	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.62	Shrink-swell	0.62	Shrink-swell	0.62
17C:							
Frederick	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Shrink-swell	0.73	Slope	1.00
		Shrink-swell	0.18	Slope	0.37	Shrink-swell	0.18
17D:							
Frederick	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.18	Shrink-swell	0.73	Shrink-swell	0.18
17E:							
Frederick	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.18	Shrink-swell	0.73	Shrink-swell	0.18
18C:							
Frederick	50	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Shrink-swell	0.73	Slope	1.00
		Shrink-swell	0.18	Slope	0.37	Shrink-swell	0.18

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
18C:							
Watahala--------	35	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
		Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22
18D:							
Frederick-------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.18	Shrink-swell	0.73	Shrink-swell	0.18
Watahala--------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22
19C:							
Gilpin----------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
				Depth to soft bedrock	0.23		
19D:							
Gilpin----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.23		
20C:							
Jefferson-------	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
20D:							
Jefferson-------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
21C:							
Lily------------	90	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.37	Slope	0.37	Depth to hard bedrock	0.46
21D:							
Lily------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46
21E:							
Lily------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46
22A:							
Maurertown------	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
23B:							
Nicelytown------	90	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
		Shrink-swell	0.06	Shrink-swell	0.06	Slope	0.12
						Shrink-swell	0.06
23C:							
Nicelytown------	90	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.98	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.98
		Shrink-swell	0.06	Shrink-swell	0.06	Shrink-swell	0.06
24B:							
Ogles-----------	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
				Depth to saturated zone	0.24		
25A:							
Ogles-----------	50	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
				Depth to saturated zone	0.24		
Pope------------	25	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
Philo-----------	20	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Depth to saturated zone	0.07	Ponding	1.00	Depth to saturated zone	0.07
26C:							
Oriskany--------	90	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Large stones content	1.00
26D:							
Oriskany--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
27E:							
Oriskany--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
28A:							
Philo	90	Very limited Flooding Ponding Depth to saturated zone	 1.00 1.00 0.07	Very limited Flooding Depth to saturated zone Ponding	 1.00 1.00 1.00	Very limited Flooding Ponding Depth to saturated zone	 1.00 1.00 0.07
29A:							
Pope	90	Very limited Flooding	 1.00	Very limited Flooding	 1.00	Very limited Flooding	 1.00
30:							
Quarries, limestone	95	Not rated		Not rated		Not rated	
31F:							
Rock outcrop	50	Not rated		Not rated		Not rated	
Beech Grove	25	Very limited Slope Depth to hard bedrock	 1.00 1.00	Very limited Slope Depth to hard bedrock	 1.00 1.00	Very limited Slope Depth to hard bedrock	 1.00 1.00
Benthole	20	Very limited Slope Large stones content	 1.00 0.49	Very limited Slope Large stones content	 1.00 0.49	Very limited Slope Large stones content	 1.00 0.49
32C:							
Shelocta	90	Somewhat limited Slope	 0.63	Somewhat limited Slope	 0.63	Very limited Slope	 1.00
32D:							
Shelocta	90	Very limited Slope	 1.00	Very limited Slope	 1.00	Very limited Slope	 1.00
33B:							
Slabtown	90	Somewhat limited Shrink-swell Depth to saturated zone	 0.50 0.07	Very limited Depth to saturated zone Shrink-swell	 1.00 1.00	Somewhat limited Shrink-swell Slope Depth to saturated zone	 0.50 0.12 0.07
33C:							
Slabtown	90	Somewhat limited Shrink-swell Slope Depth to saturated zone	 0.50 0.37 0.07	Very limited Depth to saturated zone Shrink-swell Slope	 1.00 1.00 0.37	Very limited Slope Shrink-swell Depth to saturated zone	 1.00 0.50 0.07
34B:							
Tumbling	80	Somewhat limited Shrink-swell	 0.01	Somewhat limited Shrink-swell	 0.01	Somewhat limited Slope Shrink-swell	 0.12 0.01
34C:							
Tumbling	85	Somewhat limited Slope Shrink-swell	 0.37 0.01	Somewhat limited Slope Shrink-swell	 0.37 0.01	Very limited Slope Shrink-swell	 1.00 0.01

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
34D:							
Tumbling	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.01	Shrink-swell	0.01	Shrink-swell	0.01
35C:							
Tumbling	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
		Shrink-swell	0.01	Shrink-swell	0.01	Shrink-swell	0.01
35D:							
Tumbling	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.01	Shrink-swell	0.01	Shrink-swell	0.01
36C:							
Tumbling	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
		Shrink-swell	0.01	Shrink-swell	0.01	Shrink-swell	0.01
36D:							
Tumbling	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.01	Shrink-swell	0.01	Shrink-swell	0.01
37:							
Udorthents	50	Not rated		Not rated		Not rated	
Urban land	40	Not rated		Not rated		Not rated	
38C:							
Watahala	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
		Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22
38D:							
Watahala	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22
38E:							
Watahala	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22
38F:							
Watahala	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22
39C:							
Watahala	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
		Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22
39D:							
Watahala	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
39E:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22
40F:							
Weikert---------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Rough-----------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Large stones content	0.03	Large stones content	0.03	Large stones content	0.03
Rock outcrop----	25	Not rated		Not rated		Not rated	
41D:							
Westmoreland----	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.71		
Culleoka--------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Depth to hard bedrock	1.00	Depth to hard bedrock	0.71
41E:							
Westmoreland----	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.71		
Culleoka--------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Depth to hard bedrock	1.00	Depth to hard bedrock	0.71
W:							
Water-----------	100	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
1B:							
Alonzville------	90	Very limited		Very limited		Very limited	
		Low strength	1.00	Cutbanks cave	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00		
		Frost action	0.50				
2A:							
Atkins----------	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Frost action	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
3D:							
Bailegap--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to hard bedrock	0.77		
				Cutbanks cave	0.10		
4E:							
Bailegap--------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to hard bedrock	0.77		
				Cutbanks cave	0.10		
Lily------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	0.78			Depth to bedrock	0.46
		Frost action	0.50	Slope	1.00	Droughty	0.01
				Cutbanks cave	0.10		
Dekalb----------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50			Droughty	0.99
		Large stones content	0.49	Slope	1.00	Depth to bedrock	0.35
				Large stones content	0.49		
5C:							
Berks-----------	45	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Gravel content	0.94
						Depth to bedrock	0.65
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Cutbanks cave	0.10		
Weikert---------	40	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Cutbanks cave	0.10		

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
5D:							
Berks	50	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Slope	1.00	Gravel content	0.94
		Frost action	0.50	Cutbanks cave	0.10	Depth to bedrock	0.65
Weikert	35	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
5E:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Slope	1.00	Gravel content	0.94
		Frost action	0.50	Cutbanks cave	0.10	Depth to bedrock	0.65
Weikert	40	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
6D:							
Bland	85	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.06
		Shrink-swell	0.78	Too clayey	0.76		
6E:							
Bland	90	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.06
		Shrink-swell	0.78	Too clayey	0.76		
7D:							
Brushy	90	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Gravel content	1.00
		Frost action	0.50	Cutbanks cave	1.00	Droughty	1.00
		Depth to hard bedrock	0.15	Slope	1.00	Slope	1.00
7E:							
Brushy	90	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Gravel content	1.00
		Depth to hard bedrock	0.15	Cutbanks cave	1.00	Droughty	1.00
8D:							
Calvin	80	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Slope	1.00	Depth to bedrock	0.71
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.32

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
8E:							
Calvin	90	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Slope	1.00	Depth to bedrock	0.71
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.32
9D:							
Calvin	80	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Slope	1.00	Depth to bedrock	0.71
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.32
10E:							
Calvin	55	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Slope	1.00	Depth to bedrock	0.71
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.32
Rough	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Large stones content	0.03	Droughty	1.00
11D:							
Carbo	60	Very limited		Very limited		Very limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Shrink-swell	1.00	Too clayey	1.00	Depth to bedrock	0.90
		Slope	1.00	Slope	1.00	Droughty	0.44
Rock outcrop	25	Not rated		Not rated		Not rated	
11E:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.90
		Shrink-swell	1.00	Too clayey	1.00	Droughty	0.44
Rock outcrop	25	Not rated		Not rated		Not rated	
12D:							
Carbo	60	Very limited		Very limited		Very limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Shrink-swell	1.00	Too clayey	1.00	Depth to bedrock	0.90
		Slope	1.00	Slope	1.00	Droughty	0.44
Rock outcrop	25	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
13F:							
Culleoka--------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Slope	1.00	Depth to bedrock	0.71
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.32
Berks-----------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Slope	1.00	Gravel content	0.94
		Frost action	0.50	Cutbanks cave	0.10	Depth to bedrock	0.65
14D:							
Dekalb----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.99
		Large stones content	0.49	Large stones content	0.49	Depth to bedrock	0.35
14E:							
Dekalb----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.99
		Large stones content	0.49	Large stones content	0.49	Depth to bedrock	0.35
15D:							
Dekalb----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.99
		Large stones content	0.49	Large stones content	0.49	Depth to bedrock	0.35
Rock outcrop----	15	Not rated		Not rated		Not rated	
15F:							
Dekalb----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.99
		Large stones content	0.49	Large stones content	0.49	Depth to bedrock	0.35
Rock outcrop----	15	Not rated		Not rated		Not rated	
16C:							
Frederick-------	90	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.99	Slope	0.37
		Shrink-swell	0.62	Slope	0.37		
		Frost action	0.50	Cutbanks cave	0.10		
16D:							
Frederick-------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.99		
		Shrink-swell	0.62	Cutbanks cave	0.10		

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
17C:							
Frederick-------	90	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.99	Slope	0.37
		Frost action	0.50	Slope	0.37	Gravel content	0.01
		Slope	0.37	Cutbanks cave	0.10		
17D:							
Frederick-------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.99	Gravel content	0.01
		Frost action	0.50	Cutbanks cave	0.10		
17E:							
Frederick-------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.99	Gravel content	0.01
		Frost action	0.50	Cutbanks cave	0.10		
18C:							
Frederick-------	50	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.99	Slope	0.37
		Frost action	0.50	Slope	0.37	Gravel content	0.01
		Slope	0.37	Cutbanks cave	0.10		
Watahala--------	35	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.68
		Slope	0.37	Too clayey	0.98	Slope	0.37
		Shrink-swell	0.22	Slope	0.37	Droughty	0.04
18D:							
Frederick-------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.99	Gravel content	0.01
		Frost action	0.50	Cutbanks cave	0.10		
Watahala--------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.68
		Shrink-swell	0.22	Too clayey	0.98	Droughty	0.04
19C:							
Gilpin----------	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Slope	0.63	Slope	0.63
		Slope	0.63	Depth to soft bedrock	0.23	Depth to bedrock	0.23
		Frost action	0.50	Cutbanks cave	0.10		
19D:							
Gilpin----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Depth to soft bedrock	0.23	Depth to bedrock	0.23
		Frost action	0.50	Cutbanks cave	0.10		
20C:							
Jefferson-------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Cutbanks cave	0.10	Large stones content	0.32

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
20D:							
Jefferson-------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Large stones content	0.32
21C:							
Lily------------	90	Somewhat limited		Very limited		Somewhat limited	
		Low strength	0.78	Depth to hard bedrock	1.00	Depth to bedrock	0.46
		Frost action	0.50	Slope	0.37	Slope	0.37
		Depth to hard bedrock	0.46	Cutbanks cave	0.10	Droughty	0.01
21D:							
Lily------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	0.78	Slope	1.00	Depth to bedrock	0.46
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.01
21E:							
Lily------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	0.78	Slope	1.00	Depth to bedrock	0.46
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.01
22A:							
Maurertown------	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	1.00		
23B:							
Nicelytown------	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
		Low strength	1.00	Cutbanks cave	0.10		
		Depth to saturated zone	0.75				
23C:							
Nicelytown------	90	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
		Low strength	1.00	Slope	0.63	Slope	0.63
		Depth to saturated zone	0.75	Cutbanks cave	0.10		
24B:							
Ogles-----------	90	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Flooding	1.00
		Flooding	1.00	Cutbanks cave	1.00	Large stones content	1.00
		Frost action	0.50	Flooding	0.80		

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
25A:							
Ogles-----------	50	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
		Frost action	0.50	Flooding	0.60		
Pope------------	25	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
		Frost action	0.50	Flooding	0.60	Droughty	0.01
Philo-----------	20	Very limited		Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00			Flooding	0.60
		Frost action	0.50	Ponding	1.00	Depth to saturated zone	0.03
				Flooding	0.60		
26C:							
Oriskany--------	90	Very limited		Very limited		Somewhat limited	
		Large stones content	1.00	Large stones content	1.00	Gravel content	0.68
						Slope	0.63
		Slope	0.63	Slope	0.63		
		Frost action	0.50	Cutbanks cave	0.10		
26D:							
Oriskany--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Gravel content	0.68
		Frost action	0.50	Cutbanks cave	0.10		
27E:							
Oriskany--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Gravel content	0.68
		Frost action	0.50	Cutbanks cave	0.10		
28A:							
Philo-----------	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00			Flooding	0.60
		Frost action	0.50	Ponding	1.00	Depth to saturated zone	0.03
				Flooding	0.60		
29A:							
Pope------------	90	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
		Frost action	0.50	Flooding	0.60	Droughty	0.01
30:							
Quarries, limestone------	95	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
31F:							
Rock outcrop----	50	Not rated		Not rated		Not rated	
Beech Grove-----	25	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
		Frost action	0.50				
Benthole--------	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Large stones content	0.49	Droughty	0.18
		Large stones content	0.49			Gravel content	0.16
				Cutbanks cave	0.10		
32C:							
Shelocta--------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Cutbanks cave	0.10		
32D:							
Shelocta--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10		
33B:							
Slabtown--------	90	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
		Shrink-swell	0.50				
		Frost action	0.50	Too clayey	0.50		
				Cutbanks cave	0.10		
33C:							
Slabtown--------	90	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to saturated zone	1.00	Slope	0.37
		Shrink-swell	0.50			Depth to saturated zone	0.03
		Frost action	0.50	Too clayey	0.50		
				Slope	0.37		
34B:							
Tumbling--------	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	0.10	Large stones content	0.08
		Low strength	0.02				
		Shrink-swell	0.01				
34C:							
Tumbling--------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Slope	0.37	Slope	0.37
		Slope	0.37	Cutbanks cave	0.10	Large stones content	0.08
		Low strength	0.02				
34D:							
Tumbling--------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Large stones content	0.08
		Low strength	0.02				

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
35C:							
Tumbling--------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Slope	0.37	Slope	0.37
		Slope	0.37	Cutbanks cave	0.10	Large stones content	0.08
		Low strength	0.02				
35D:							
Tumbling--------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Large stones content	0.08
		Low strength	0.02				
36C:							
Tumbling--------	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Slope	0.37	Slope	0.37
		Slope	0.37	Cutbanks cave	0.10	Large stones content	0.08
		Low strength	0.02				
36D:							
Tumbling--------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Large stones content	0.08
		Low strength	0.02				
37:							
Udorthents------	50	Not rated		Not rated		Not rated	
Urban land------	40	Not rated		Not rated		Not rated	
38C:							
Watahala--------	90	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.68
		Slope	0.37	Too clayey	0.98	Slope	0.37
		Shrink-swell	0.22	Slope	0.37	Droughty	0.04
38D:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.68
		Shrink-swell	0.22	Too clayey	0.98	Droughty	0.04
38E:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.68
		Shrink-swell	0.22	Too clayey	0.98	Droughty	0.04
38F:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.68
		Shrink-swell	0.22	Too clayey	0.98	Droughty	0.04
39C:							
Watahala--------	90	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.68
		Slope	0.37	Too clayey	0.98	Slope	0.37
		Shrink-swell	0.22	Slope	0.37	Droughty	0.04

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
39D:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.68
		Shrink-swell	0.22	Too clayey	0.98	Droughty	0.04
39E:							
Watahala--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.68
		Shrink-swell	0.22	Too clayey	0.98	Droughty	0.04
40F:							
Weikert---------	35	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
		Frost action	0.50	Cutbanks cave	0.10		
Rough-----------	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
		Frost action	0.50	Large stones content	0.03		
Rock outcrop----	25	Not rated		Not rated		Not rated	
41D:							
Westmoreland----	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Depth to hard bedrock	0.71		
		Frost action	0.50				
				Cutbanks cave	0.10		
Culleoka--------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.71			Depth to bedrock	0.71
				Slope	1.00	Gravel content	0.32
		Frost action	0.50	Cutbanks cave	0.10		
41E:							
Westmoreland----	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Depth to hard bedrock	0.71		
		Frost action	0.50				
				Cutbanks cave	0.10		
Culleoka--------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.71			Depth to bedrock	0.71
				Slope	1.00	Gravel content	0.32
		Frost action	0.50	Cutbanks cave	0.10		
W:							
Water-----------	100	Not rated		Not rated		Not rated	

Table 12.—Sanitary Facilities, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
1B:					
Alonzville	90	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Slow water movement	0.50	Slope	0.82
		Flooding	0.40	Seepage	0.50
2A:					
Atkins	90	Very limited		Very limited	
		Flooding	1.00	Ponding	1.00
		Slow water movement	1.00	Flooding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
3D:					
Bailegap	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Depth to bedrock	0.98	Depth to soft bedrock	0.93
		Slow water movement	0.50	Depth to hard bedrock	0.77
4E:					
Bailegap	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Depth to bedrock	0.98	Depth to soft bedrock	0.93
		Slow water movement	0.50	Depth to hard bedrock	0.77
Lily	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
Dekalb	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Filtering capacity	1.00	Seepage	1.00
5C:					
Berks	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00
Weikert	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
5D:					
Berks---------------	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
Weikert-------------	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
5E:					
Berks---------------	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
Weikert-------------	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
6D:					
Bland---------------	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	1.00		
6E:					
Bland---------------	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	1.00		
7D:					
Brushy--------------	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
7E:					
Brushy--------------	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
8D:					
Calvin--------------	80	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8E:					
Calvin	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
9D:					
Calvin	80	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
10E:					
Calvin	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
Rough	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00		
11D:					
Carbo	60	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop	25	Not rated		Not rated	
11E:					
Carbo	60	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop	25	Not rated		Not rated	
12D:					
Carbo	60	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop	25	Not rated		Not rated	
13F:					
Culleoka	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
13F:					
Berks---------------	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
14D:					
Dekalb--------------	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Filtering capacity	1.00	Seepage	1.00
14E:					
Dekalb--------------	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Filtering capacity	1.00	Seepage	1.00
15D:					
Dekalb--------------	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Filtering capacity	1.00	Seepage	1.00
Rock outcrop--------	15	Not rated		Not rated	
15F:					
Dekalb--------------	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Filtering capacity	1.00	Seepage	1.00
Rock outcrop--------	15	Not rated		Not rated	
16C:					
Frederick-----------	90	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50
16D:					
Frederick-----------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
17C:					
Frederick-----------	90	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
17D:					
Frederick-----------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
17E:					
Frederick-----------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
18C:					
Frederick-----------	50	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
				Seepage	0.50
		Slope	0.37		
Watahala------------	35	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
				Seepage	1.00
		Slope	0.37		
18D:					
Frederick-----------	50	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
Watahala------------	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	1.00
19C:					
Gilpin--------------	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.63		
		Slow water movement	0.50	Slope	1.00
				Seepage	0.50
19D:					
Gilpin--------------	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00		
		Slow water movement	0.50	Slope	1.00
				Seepage	0.50
20C:					
Jefferson-----------	90	Very limited		Very limited	
		Seepage	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00
20D:					
Jefferson-----------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
21C:					
Lily----------------	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage	1.00	Slope	1.00
		Slope	0.37	Seepage	1.00
21D:					
Lily----------------	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
21E:					
Lily----------------	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
22A:					
Maurertown----------	90	Very limited		Very limited	
		Slow water movement	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	0.50
23B:					
Nicelytown----------	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Slope	0.68
23C:					
Nicelytown----------	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00
		Slow water movement	1.00	Depth to saturated zone	1.00
		Slope	0.63		
24B:					
Ogles---------------	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Large stones content	1.00	Large stones content	1.00
		Seepage	1.00	Seepage	1.00
25A:					
Ogles---------------	50	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Large stones content	1.00	Large stones content	1.00
		Seepage	1.00	Seepage	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
25A:					
Pope----------------	25	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage	1.00	Seepage	1.00
Philo---------------	20	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00
26C:					
Oriskany------------	90	Very limited		Very limited	
		Large stones content	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
		Slope	0.63	Large stones content	1.00
26D:					
Oriskany------------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Seepage	1.00
		Seepage	1.00	Large stones content	1.00
27E:					
Oriskany------------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Seepage	1.00
		Seepage	1.00	Large stone content	1.00
28A:					
Philo---------------	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00
29A:					
Pope----------------	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage	1.00	Seepage	1.00
30:					
Quarries, limestone-	95	Not rated		Not rated	
31F:					
Rock outcrop--------	50	Not rated		Not rated	
Beech Grove---------	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Benthole------------	20	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	0.49	Large stones content	0.98
		Slow water movement	0.46	Seepage	0.54

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
32C:					
Shelocta------------	90	Very limited		Very limited	
		Seepage	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00
		Slow water movement	0.50		
32D:					
Shelocta------------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
		Slow water movement	0.50		
33B:					
Slabtown------------	90	Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Slope	0.68
				Seepage	0.50
		Slow water movement	1.00	Depth to saturated zone	0.44
33C:					
Slabtown------------	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00
				Seepage	0.50
		Slow water movement	1.00	Depth to saturated zone	0.44
		Slope	0.37		
34B:					
Tumbling------------	80	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
34C:					
Tumbling------------	85	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
				Seepage	0.50
		Slope	0.37		
34D:					
Tumbling------------	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
35C:					
Tumbling------------	90	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
				Seepage	0.50
		Slope	0.37		
35D:					
Tumbling------------	85	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
36C:					
Tumbling	80	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50
36D:					
Tumbling	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
37:					
Udorthents	50	Not rated		Not rated	
Urban land	40	Not rated		Not rated	
38C:					
Watahala	90	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	1.00
38D:					
Watahala	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	1.00
38E:					
Watahala	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	1.00
38F:					
Watahala	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	1.00
39C:					
Watahala	90	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	1.00
39D:					
Watahala	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	1.00
39E:					
Watahala	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
40F:					
Weikert	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
Rough	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00		
Rock outcrop	25	Not rated		Not rated	
41D:					
Westmoreland	45	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Depth to bedrock	0.89	Depth to hard bedrock	0.71
		Slow water movement	0.50	Seepage	0.50
Culleoka	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
41E:					
Westmoreland	45	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Depth to bedrock	0.89	Depth to hard bedrock	0.71
		Slow water movement	0.50	Seepage	0.50
Culleoka	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
W:					
Water	100	Not rated		Not rated	

Table 12.—Sanitary Facilities, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1B:							
Alonzville-------	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Flooding	0.40			Gravel content	0.05
2A:							
Atkins-----------	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00		
3D:							
Bailegap---------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.94	Depth to bedrock	0.94
4E:							
Bailegap---------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.94	Depth to bedrock	0.94
Lily-------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	0.50
Dekalb-----------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
5C:							
Berks------------	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage	1.00	Seepage	1.00	Slope	0.63
		Slope	0.63	Slope	0.63	Gravel content	0.38
Weikert----------	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage	1.00	Slope	0.63	Gravel content	0.94
		Slope	0.63			Slope	0.63
5D:							
Berks------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Gravel content	0.38
Weikert----------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00			Gravel content	0.94

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
5E:							
Berks------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Gravel content	0.38
Weikert----------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00			Gravel content	0.94
6D:							
Bland------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
6E:							
Bland------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
7D:							
Brushy-----------	90	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Too clayey	0.50			Slope	1.00
7E:							
Brushy-----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	0.50			Gravel content	1.00
8D:							
Calvin-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	0.50
8E:							
Calvin-----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	0.50
9D:							
Calvin-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	0.50
10E:							
Calvin-----------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	0.50

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
10E:							
Rough------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00			Seepage	0.50
11D:							
Carbo------------	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	1.00	Too clayey	1.00
		Slope	1.00			Hard to compact	1.00
Rock outcrop-----	25	Not rated		Not rated		Not rated	
11E:							
Carbo------------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
Rock outcrop-----	25	Not rated		Not rated		Not rated	
12D:							
Carbo------------	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	1.00	Too clayey	1.00
		Slope	1.00			Hard to compact	1.00
Rock outcrop-----	25	Not rated		Not rated		Not rated	
13F:							
Culleoka---------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Too clayey	0.50
Berks------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Gravel content	0.38
14D:							
Dekalb-----------	90	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
14E:							
Dekalb-----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
15D:							
Dekalb-----------	75	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
Rock outcrop-----	15	Not rated		Not rated		Not rated	

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
15F:							
Dekalb-----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
Rock outcrop-----	15	Not rated		Not rated		Not rated	
16C:							
Frederick--------	90	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.37	Too clayey	1.00
		Slope	0.37			Slope	0.37
16D:							
Frederick--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
17C:							
Frederick--------	90	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.37	Too clayey	1.00
		Slope	0.37			Hard to compact	1.00
						Slope	0.37
17D:							
Frederick--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
17E:							
Frederick--------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
18C:							
Frederick--------	50	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.37	Too clayey	1.00
		Slope	0.37			Hard to compact	1.00
						Slope	0.37
Watahala---------	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.37	Slope	0.37	Gravel content	0.61
						Slope	0.37
18D:							
Frederick--------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
Watahala---------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.61

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
19C:							
Gilpin	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
		Too clayey	0.50			Too clayey	0.50
19D:							
Gilpin	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
20C:							
Jefferson	90	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Seepage	1.00	Slope	0.63
		Slope	0.63	Slope	0.63	Seepage	0.50
		Too clayey	0.50			Too clayey	0.50
20D:							
Jefferson	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	0.50
		Too clayey	0.50			Too clayey	0.50
21C:							
Lily	90	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage	1.00	Seepage	1.00	Seepage	0.50
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
21D:							
Lily	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	0.50
21E:							
Lily	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	0.50
22A:							
Maurertown	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	1.00	Flooding	0.40	Too clayey	1.00
23B:							
Nicelytown	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Too clayey	0.50			Too clayey	0.50

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
23C:							
Nicelytown-------	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Slope	0.63	Slope	0.63	Slope	0.63
		Too clayey	0.50			Too clayey	0.50
24B:							
Ogles------------	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Large stones	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.50
		Large stones	1.00	Seepage	1.00	Too sandy	0.50
25A:							
Ogles------------	50	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Large stones	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.50
		Large stones	1.00	Seepage	1.00	Too sandy	0.50
Pope-------------	25	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Gravel content	0.49
		Seepage	1.00	Seepage	1.00	Seepage	0.21
Philo------------	20	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
		Seepage	1.00	Ponding	1.00		
26C:							
Oriskany---------	90	Very limited		Very limited		Very limited	
		Large stones	1.00	Seepage	1.00	Large stones	1.00
		Seepage	1.00	Slope	0.63	Slope	0.63
		Slope	0.63			Seepage	0.50
26D:							
Oriskany---------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones	1.00	Seepage	1.00	Large stones	1.00
		Seepage	1.00			Seepage	0.50
27E:							
Oriskany---------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones	1.00	Seepage	1.00	Large stones	1.00
		Seepage	1.00			Seepage	0.50
28A:							
Philo------------	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
		Seepage	1.00	Ponding	1.00		
29A:							
Pope-------------	90	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Gravel content	0.49
		Seepage	1.00	Seepage	1.00	Seepage	0.21

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
30:							
Quarries, limestone	95	Not rated		Not rated		Not rated	
31F:							
Rock outcrop-----	50	Not rated		Not rated		Not rated	
Beech Grove------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
Benthole---------	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.80			Large stones content	0.80
		Too clayey	0.50			Too clayey	0.50
32C:							
Shelocta---------	90	Very limited		Somewhat limited		Somewhat limited	
		Seepage	1.00	Slope	0.63	Slope	0.63
		Slope	0.63				
32D:							
Shelocta---------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00				
33B:							
Slabtown---------	90	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Depth to saturated zone	0.44	Hard to compact	1.00
		Depth to saturated zone	0.95			Depth to saturated zone	0.68
33C:							
Slabtown---------	90	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Depth to saturated zone	0.44	Hard to compact	1.00
		Depth to saturated zone	0.95	Slope	0.37	Depth to saturated zone	0.68
		Slope	0.37			Slope	0.37
34B:							
Tumbling---------	80	Somewhat limited		Not limited		Not limited	
		Too clayey	0.50				
34C:							
Tumbling---------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.37	Slope	0.37
		Slope	0.37				
34D:							
Tumbling---------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50				
35C:							
Tumbling---------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.37	Slope	0.37
		Slope	0.37				

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
35D:							
Tumbling----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50				
36C:							
Tumbling----------	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.37	Slope	0.37
		Slope	0.37				
36D:							
Tumbling----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50				
37:							
Udorthents--------	50	Not rated		Not rated		Not rated	
Urban land--------	40	Not rated		Not rated		Not rated	
38C:							
Watahala----------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.37	Slope	0.37	Gravel content	0.61
						Slope	0.37
38D:							
Watahala----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.61
38E:							
Watahala----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.61
38F:							
Watahala----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.61
39C:							
Watahala----------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.37	Slope	0.37	Gravel content	0.61
						Slope	0.37
39D:							
Watahala----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.61
39E:							
Watahala----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.61
40F:							
Weikert-----------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00			Gravel content	0.94

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40F:							
Rough------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00			Seepage	0.50
Rock outcrop-----	25	Not rated		Not rated		Not rated	
41D:							
Westmoreland-----	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.71	Depth to bedrock	0.71
		Too clayey	0.50			Too clayey	0.50
Culleoka---------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Too clayey	0.50
41E:							
Westmoreland-----	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.71	Depth to bedrock	0.71
		Too clayey	0.50			Too clayey	0.50
Culleoka---------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Too clayey	0.50
W:							
Water------------	100	Not rated		Not rated		Not rated	

Table 13.—Construction Materials, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
1B:					
Alonzville----------	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
2A:					
Atkins--------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
3D:					
Bailegap------------	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
4E:					
Bailegap------------	35	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Lily----------------	30	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
Dekalb--------------	25	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
5C:					
Berks---------------	45	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Weikert-------------	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
5D:					
Berks---------------	50	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Weikert-------------	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
5E:					
Berks---------------	45	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
5E:					
Weikert----------------	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
6D:					
Bland------------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
6E:					
Bland------------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
7D:					
Brushy-----------------	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
7E:					
Brushy-----------------	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
8D:					
Calvin-----------------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
8E:					
Calvin-----------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
9D:					
Calvin-----------------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
10E:					
Calvin-----------------	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rough------------------	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
11D:					
Carbo------------------	60	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop-----------	25	Not rated		Not rated	

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
11E:					
Carbo	60	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	25	Not rated		Not rated	
12D:					
Carbo	60	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	25	Not rated		Not rated	
13F:					
Culleoka	55	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Berks	35	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
14D:					
Dekalb	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
14E:					
Dekalb	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
15D:					
Dekalb	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	15	Not rated		Not rated	
15F:					
Dekalb	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	15	Not rated		Not rated	
16C:					
Frederick	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
16D:					
Frederick	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
17C:					
Frederick	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
17D:					
Frederick-----------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
17E:					
Frederick-----------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
18C:					
Frederick-----------	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Watahala------------	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
18D:					
Frederick-----------	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Watahala------------	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
19C:					
Gilpin--------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
19D:					
Gilpin--------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
20C:					
Jefferson-----------	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
20D:					
Jefferson-----------	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
21C:					
Lily----------------	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
21D:					
Lily----------------	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
21E:					
Lily	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
22A:					
Maurertown	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
23B:					
Nicelytown	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
23C:					
Nicelytown	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
24B:					
Ogles	90	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
25A:					
Ogles	50	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
Pope	25	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.10
Philo	20	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
26C:					
Oriskany	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
26D:					
Oriskany	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
27E:					
Oriskany	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
28A:					
Philo	90	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
29A:					
Pope----------------	90	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.10
30:					
Quarries, limestone-	95	Not rated		Not rated	
31F:					
Rock outcrop--------	50	Not rated		Not rated	
Beech Grove---------	25	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Benthole------------	20	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
32C:					
Shelocta------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
32D:					
Shelocta------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
33B:					
Slabtown------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
33C:					
Slabtown------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
34B:					
Tumbling------------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
34C:					
Tumbling------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
34D:					
Tumbling------------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
35C:					
Tumbling------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
35D:					
Tumbling------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
36C:					
Tumbling------------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
36D:					
Tumbling------------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
37:					
Udorthents----------	50	Not rated		Not rated	
Urban land----------	40	Not rated		Not rated	
38C:					
Watahala------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
38D:					
Watahala------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
38E:					
Watahala------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
38F:					
Watahala------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
39C:					
Watahala------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
39D:					
Watahala------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
39E:					
Watahala------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
40F:					
Weikert-------------	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
40F:					
Rough----------------	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop--------	25	Not rated		Not rated	
41D:					
Westmoreland--------	45	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Culleoka------------	40	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
41E:					
Westmoreland--------	45	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Culleoka------------	40	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
W:					
Water---------------	100	Not rated		Not rated	

Table 13.—Construction Materials, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1B:							
Alonzville------	90	Fair		Poor		Poor	
		Organic matter content low	0.12	Low strength	0.00	Hard to reclaim (rock fragments)	0.00
		Too acid	0.50			Too clayey	0.53
		Too clayey	0.92			Too acid	0.95
2A:							
Atkins----------	90	Fair		Poor		Poor	
		Too acid	0.50	Wetness depth	0.00	Wetness depth	0.00
						Rock fragments	0.68
						Too acid	0.95
3D:							
Bailegap--------	90	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
				Depth to bedrock	0.07	Too acid	0.95
		Too acid	0.50				
4E:							
Bailegap--------	35	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
				Depth to bedrock	0.07	Too acid	0.95
		Too acid	0.50				
Lily------------	30	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
				Slope	0.00	Depth to bedrock	0.54
		Droughty	0.20	Low strength	0.22	Too clayey	0.57
		Too acid	0.50				
Dekalb----------	25	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
				Cobble content	0.15	Depth to bedrock	0.65
		Too acid	0.50				
5C:							
Berks-----------	45	Fair		Poor		Poor	
		Droughty	0.01	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Cobble content	0.94	Depth to bedrock	0.35
						Slope	0.37
		Depth to bedrock	0.35				
Weikert---------	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Depth to bedrock	0.00	Cobble content	0.99	Depth to bedrock	0.00
		Organic matter content low	0.12			Slope	0.37

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
5D:							
Berks-----------	50	Fair		Poor		Poor	
		Droughty	0.01	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Depth to bedrock	0.35	Cobble content	0.94	Depth to bedrock	0.35
Weikert---------	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Cobble content	0.99	Depth to bedrock	0.00
5E:							
Berks-----------	45	Fair		Poor		Poor	
		Droughty	0.01	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Depth to bedrock	0.35	Cobble content	0.94	Depth to bedrock	0.35
Weikert---------	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Cobble content	0.99	Depth to bedrock	0.00
6D:							
Bland-----------	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.00	Too clayey	0.00
		Too acid	0.50	Slope	0.50	Depth to bedrock	0.93
6E:							
Bland-----------	90	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Too clayey	0.00
		Too acid	0.50	Low strength	0.00	Depth to bedrock	0.93
7D:							
Brushy----------	90	Poor		Poor		Poor	
		Droughty	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50			Too acid	0.76
7E:							
Brushy----------	90	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Too acid	0.50			Too acid	0.76
8D:							
Calvin----------	80	Fair		Poor		Poor	
		Droughty	0.01	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Depth to bedrock	0.29	Cobble content	0.97	Depth to bedrock	0.29

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
8E:							
Calvin----------	90	Fair		Poor		Poor	
		Droughty	0.01	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
				Cobble content	0.97	Depth to bedrock	0.29
		Depth to bedrock	0.29				
9D:							
Calvin----------	80	Fair		Poor		Poor	
		Droughty	0.01	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
				Cobble content	0.97	Depth to bedrock	0.29
		Depth to bedrock	0.29				
10E:							
Calvin----------	55	Fair		Poor		Poor	
		Droughty	0.01	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
				Cobble content	0.97	Depth to bedrock	0.29
		Depth to bedrock	0.29				
Rough-----------	30	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
		Too acid	0.50			Rock fragments	0.00
11D:							
Carbo-----------	60	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.00	Low strength	0.00	Slope	0.00
		Depth to bedrock	0.10	Slope	0.18	Depth to bedrock	0.10
Rock outcrop----	25	Not rated		Not rated		Not rated	
11E:							
Carbo-----------	60	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.00	Slope	0.00	Too clayey	0.00
		Depth to bedrock	0.10	Low strength	0.00	Depth to bedrock	0.10
Rock outcrop----	25	Not rated		Not rated		Not rated	
12D:							
Carbo-----------	60	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.00	Low strength	0.00	Slope	0.00
		Depth to bedrock	0.10	Shrink-swell	0.22	Depth to bedrock	0.10
Rock outcrop----	25	Not rated		Not rated		Not rated	
13F:							
Culleoka--------	55	Fair		Poor		Poor	
		Droughty	0.10	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
				Low strength	0.78	Depth to bedrock	0.29
		Depth to bedrock	0.29				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
13F:							
Berks	35	Fair		Poor		Poor	
		Droughty	0.01	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Depth to bedrock	0.35	Cobble content	0.94	Depth to bedrock	0.35
14D:							
Dekalb	90	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
		Too acid	0.50	Cobble content	0.15	Depth to bedrock	0.65
14E:							
Dekalb	85	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Too acid	0.50	Cobble content	0.15	Depth to bedrock	0.65
15D:							
Dekalb	75	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Cobble content	0.15	Slope	0.00
		Too acid	0.50	Slope	0.18	Depth to bedrock	0.65
Rock outcrop	15	Not rated		Not rated		Not rated	
15F:							
Dekalb	75	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Too acid	0.50	Cobble content	0.15	Depth to bedrock	0.65
Rock outcrop	15	Not rated		Not rated		Not rated	
16C:							
Frederick	90	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.83	Slope	0.63
		Too acid	0.46			Too acid	0.95
16D:							
Frederick	90	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too clayey	0.00
		Too acid	0.46	Shrink-swell	0.83	Too acid	0.95
17C:							
Frederick	90	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.89	Slope	0.63
		Too acid	0.50			Too acid	0.88

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
17D:							
Frederick-------	90	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too clayey	0.00
				Shrink-swell	0.89	Too acid	0.88
		Too acid	0.50				
17E:							
Frederick-------	90	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.00	Too clayey	0.00
				Shrink-swell	0.89	Too acid	0.88
		Too acid	0.50				
18C:							
Frederick-------	50	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.89	Slope	0.63
						Too acid	0.88
		Too acid	0.50				
Watahala--------	35	Fair		Good		Poor	
		Droughty	0.12			Rock fragments	0.00
		Organic matter content low	0.18			Slope	0.63
						Too acid	0.95
		Too acid	0.50				
18D:							
Frederick-------	50	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too clayey	0.00
				Shrink-swell	0.89	Too acid	0.88
		Too acid	0.50				
Watahala--------	35	Fair		Fair		Poor	
		Droughty	0.12	Slope	0.50	Slope	0.00
		Organic matter content low	0.18			Rock fragments	0.00
						Too acid	0.95
		Too acid	0.50				
19C:							
Gilpin----------	85	Fair		Poor		Fair	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.37
				Low strength	0.00	Too clayey	0.57
		Too acid	0.50			Depth to bedrock	0.77
		Droughty	0.75				
19D:							
Gilpin----------	85	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
				Low strength	0.00	Too clayey	0.57
		Too acid	0.50	Slope	0.50	Depth to bedrock	0.77
		Droughty	0.75				
20C:							
Jefferson-------	90	Fair		Fair		Fair	
		Too acid	0.12	Low strength	0.78	Hard to reclaim (rock fragments)	0.12
		Organic matter content low	0.12				
						Slope	0.37
						Rock fragments	0.71

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
20D:							
Jefferson-------	90	Fair		Fair		Poor	
		Too acid	0.12	Slope	0.50	Slope	0.00
		Organic matter content low	0.12	Low strength	0.78	Hard to reclaim (rock fragments)	0.12
						Rock fragments	0.71
21C:							
Lily------------	90	Fair		Poor		Fair	
		Organic matter content low	0.12	Depth to bedrock	0.00	Depth to bedrock	0.54
				Low strength	0.22	Too clayey	0.57
		Droughty	0.20			Slope	0.63
		Too acid	0.50				
21D:							
Lily------------	85	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
				Slope	0.00	Depth to bedrock	0.54
		Droughty	0.20	Low strength	0.22	Too clayey	0.57
		Too acid	0.50				
21E:							
Lily------------	85	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
				Slope	0.00	Depth to bedrock	0.54
		Droughty	0.20	Low strength	0.22	Too clayey	0.57
		Too acid	0.50				
22A:							
Maurertown------	90	Poor		Poor		Poor	
		Too clayey	0.00	Wetness depth	0.00	Wetness depth	0.00
				Low strength	0.00	Too clayey	0.00
				Shrink-swell	0.85		
23B:							
Nicelytown------	90	Fair		Poor		Fair	
		Organic matter content low	0.12	Low strength	0.00	Wetness depth	0.14
				Wetness depth	0.14	Too clayey	0.39
		Too acid	0.46	Shrink-swell	0.99	Rock fragments	0.88
		Too clayey	0.68				
23C:							
Nicelytown------	90	Fair		Poor		Fair	
		Organic matter content low	0.12	Low strength	0.00	Wetness depth	0.14
				Wetness depth	0.14	Slope	0.37
		Too acid	0.46	Shrink-swell	0.99	Too clayey	0.39
		Too clayey	0.68				
24B:							
Ogles-----------	90	Poor		Poor		Poor	
		Stone content	0.00	Stone content	0.00	Hard to reclaim (rock fragments)	0.00
		Cobble content	0.17	Cobble content	0.00		
		Too sandy	0.30			Rock fragments	0.00
						Too sandy	0.30

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
25A:							
Ogles-----------	50	Poor		Poor		Poor	
		Stone content	0.00	Stone content	0.00	Hard to reclaim (rock fragments)	0.00
		Cobble content	0.17	Cobble content	0.00		
		Too sandy	0.30			Rock fragments	0.00
						Too sandy	0.30
Pope------------	25	Fair		Good		Poor	
		Too acid	0.61			Hard to reclaim (rock fragments)	0.00
		Droughty	0.90				
						Rock fragments	0.00
						Too acid	0.99
Philo-----------	20	Fair		Fair		Poor	
		Organic matter content low	0.12	Wetness depth	0.76	Hard to reclaim (rock fragments)	0.00
				Cobble content	0.99		
		Too acid	0.46			Rock fragments	0.40
						Wetness depth	0.76
26C:							
Oriskany--------	90	Poor		Poor		Fair	
		Stone content	0.00	Stone content	0.00	Slope	0.37
		Organic matter content low	0.12			Too acid	0.59
						Rock fragments	0.63
		Too acid	0.50				
26D:							
Oriskany--------	90	Poor		Poor		Poor	
		Stone content	0.00	Stone content	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Too acid	0.59
						Rock fragments	0.63
		Too acid	0.50				
27E:							
Oriskany--------	90	Poor		Poor		Poor	
		Stone content	0.00	Stone content	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Too acid	0.59
						Rock fragments	0.63
		Too acid	0.50				
28A:							
Philo-----------	90	Fair		Fair		Poor	
		Organic matter content low	0.12	Wetness depth	0.76	Hard to reclaim (rock fragments)	0.00
				Cobble content	0.99		
		Too acid	0.46			Rock fragments	0.40
						Wetness depth	0.76
29A:							
Pope------------	90	Fair		Good		Poor	
		Too acid	0.61			Hard to reclaim (rock fragments)	0.00
		Droughty	0.90				
						Rock fragments	0.00
						Too acid	0.99
30:							
Quarries, limestone------	95	Not rated		Not rated		Not rated	

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
31F:							
Rock outcrop----	50	Not rated		Not rated		Not rated	
Beech Grove-----	25	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
						Rock fragments	0.92
Benthole--------	20	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
				Cobble content	0.00	Hard to reclaim (rock fragments)	0.00
		Cobble content	0.62	Low strength	0.78		
		Droughty	0.91			Rock fragments	0.00
32C:							
Shelocta--------	90	Fair		Good		Fair	
		Organic matter content low	0.12			Slope	0.37
						Too acid	0.95
		Too acid	0.46				
		Water erosion	0.99				
32D:							
Shelocta--------	90	Fair		Fair		Poor	
		Organic matter content low	0.12	Slope	0.50	Slope	0.00
						Too acid	0.95
		Too acid	0.46				
		Water erosion	0.99				
33B:							
Slabtown--------	90	Poor		Poor		Fair	
		Organic matter content low	0.00	Low strength	0.00	Wetness depth	0.76
				Wetness depth	0.76	Rock fragments	0.88
				Shrink-swell	0.80		
33C:							
Slabtown--------	90	Poor		Poor		Fair	
		Organic matter content low	0.00	Low strength	0.00	Slope	0.63
				Wetness depth	0.76	Wetness depth	0.76
				Shrink-swell	0.80	Rock fragments	0.88
34B:							
Tumbling--------	80	Fair		Fair		Fair	
		Too acid	0.46	Low strength	0.78	Hard to reclaim (rock fragments)	0.24
		Organic matter content low	0.50	Shrink-swell	0.99		
						Too clayey	0.60
		Too clayey	0.92			Rock fragments	0.94
34C:							
Tumbling--------	85	Fair		Fair		Fair	
		Too acid	0.46	Low strength	0.78	Hard to reclaim (rock fragments)	0.24
		Organic matter content low	0.50	Shrink-swell	0.99		
						Too clayey	0.60
		Too clayey	0.92			Slope	0.63
34D:							
Tumbling--------	80	Fair		Fair		Poor	
		Too acid	0.46	Slope	0.50	Slope	0.00
		Organic matter content low	0.50	Low strength	0.78	Hard to reclaim (rock fragments)	0.24
				Shrink-swell	0.99		
		Too clayey	0.92			Too clayey	0.60

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
35C:							
Tumbling--------	90	Fair		Fair		Fair	
		Too acid	0.46	Low strength	0.78	Hard to reclaim (rock fragments)	0.24
		Organic matter content low	0.50	Shrink-swell	0.99	Too clayey	0.60
		Too clayey	0.92			Slope	0.63
35D:							
Tumbling--------	85	Fair		Fair		Poor	
		Too acid	0.46	Slope	0.50	Slope	0.00
		Organic matter content low	0.50	Low strength	0.78	Hard to reclaim (rock fragments)	0.24
		Too clayey	0.92	Shrink-swell	0.99	Too clayey	0.60
36C:							
Tumbling--------	80	Fair		Fair		Fair	
		Too acid	0.46	Low strength	0.78	Hard to reclaim (rock fragments)	0.24
		Organic matter content low	0.50	Shrink-swell	0.99	Too clayey	0.60
		Too clayey	0.92			Slope	0.63
36D:							
Tumbling--------	80	Fair		Poor		Poor	
		Too acid	0.46	Slope	0.00	Slope	0.00
		Organic matter content low	0.50	Low strength	0.78	Hard to reclaim (rock fragments)	0.24
		Too clayey	0.92	Shrink-swell	0.99	Too clayey	0.60
37:							
Udorthents------	50	Not rated		Not rated		Not rated	
Urban land------	40	Not rated		Not rated		Not rated	
38C:							
Watahala--------	90	Fair		Good		Poor	
		Droughty	0.12			Rock fragments	0.00
		Organic matter content low	0.18			Slope	0.63
		Too acid	0.50			Too acid	
38D:							
Watahala--------	90	Fair		Fair		Poor	
		Droughty	0.12	Slope	0.50	Slope	0.00
		Organic matter content low	0.18			Rock fragments	0.00
		Too acid	0.50			Too acid	0.95
38E:							
Watahala--------	90	Fair		Poor		Poor	
		Droughty	0.12	Slope	0.00	Slope	0.00
		Organic matter content low	0.18			Rock fragments	0.00
		Too acid	0.50			Too acid	0.95
38F:							
Watahala--------	90	Fair		Poor		Poor	
		Droughty	0.12	Slope	0.00	Slope	0.00
		Organic matter content low	0.18			Rock fragments	0.00
		Too acid	0.50			Too acid	0.95

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
39C:							
Watahala--------	90	Fair		Good		Poor	
		Droughty	0.12			Rock fragments	0.00
		Organic matter content low	0.18			Slope	0.63
		Too acid	0.50			Too acid	0.95
39D:							
Watahala--------	90	Fair		Poor		Poor	
		Droughty	0.12	Slope	0.00	Slope	0.00
		Organic matter content low	0.18			Rock fragments	0.00
		Too acid	0.50			Too acid	0.95
39E:							
Watahala--------	90	Fair		Poor		Poor	
		Droughty	0.12	Slope	0.00	Slope	0.00
		Organic matter content low	0.18			Rock fragments	0.00
		Too acid	0.50			Too acid	0.95
40F:							
Weikert---------	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Cobble content	0.99	Depth to bedrock	0.00
Rough-----------	30	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
		Too acid	0.50			Rock fragments	0.00
Rock outcrop----	25	Not rated		Not rated		Not rated	
41D:							
Westmoreland----	45	Fair		Poor		Poor	
		Organic matter content low	0.12	Low strength	0.00	Slope	0.00
				Depth to bedrock	0.29	Hard to reclaim (rock fragments)	0.00
		Too acid	0.74	Slope	0.50		
		Too clayey	0.82			Too clayey	0.48
Culleoka--------	40	Fair		Poor		Poor	
		Droughty	0.10	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Rock fragments	0.00
				Low strength	0.78	Depth to bedrock	0.29
		Depth to bedrock	0.29				
41E:							
Westmoreland----	45	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
				Low strength	0.00	Hard to reclaim (rock fragments)	0.00
		Too acid	0.74	Depth to bedrock	0.29		
		Too clayey	0.82			Too clayey	0.48
Culleoka--------	40	Fair		Poor		Poor	
		Droughty	0.10	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
				Low strength	0.78	Depth to bedrock	0.29
		Depth to bedrock	0.29				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
W:							
Water-----------	100	Not rated		Not rated		Not rated	

Table 14.—Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
1B:							
Alonzville------	90	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Piping	1.00	Depth to water	1.00
				Ponding	1.00		
				Seepage	0.03		
2A:							
Atkins----------	90	Somewhat limited		Very limited		Very limited	
		Seepage	0.03	Ponding	1.00	Cutbanks cave	1.00
				Depth to saturated zone	1.00	Slow refill	0.30
3D:							
Bailegap--------	90	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Piping	1.00	Depth to water	1.00
		Slope	0.28	Thin layer	0.34		
		Depth to bedrock	0.22				
4E:							
Bailegap--------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Piping	1.00	Depth to water	1.00
		Seepage	0.70	Thin layer	0.34		
		Depth to bedrock	0.22				
Lily------------	30	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.86	Depth to water	1.00
		Slope	1.00	Seepage	0.03		
		Depth to bedrock	0.86				
Dekalb----------	25	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.83	Depth to water	1.00
		Slope	1.00	Large stones content	0.49		
		Depth to bedrock	0.83	Seepage	0.03		
5C:							
Berks-----------	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.91	Depth to water	1.00
		Depth to bedrock	0.91	Seepage	0.25		
		Slope	0.01				
Weikert---------	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Seepage	0.70	Seepage	0.25		
		Slope	0.01				
5D:							
Berks-----------	50	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.91	Depth to water	1.00
		Depth to bedrock	0.91	Seepage	0.25		
		Slope	0.28				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
5D:							
Weikert----------	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Seepage	0.70	Seepage	0.25		
		Slope	0.28				
5E:							
Berks-----------	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.91	Depth to water	1.00
		Slope	1.00	Seepage	0.25		
		Depth to bedrock	0.91				
Weikert----------	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	1.00	Seepage	0.25		
		Seepage	0.70				
6D:							
Bland-----------	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.66	Hard to pack	0.72	Depth to water	1.00
		Slope	0.12	Thin layer	0.66		
		Seepage	0.03				
6E:							
Bland-----------	90	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.66	Hard to pack	0.72	Depth to water	1.00
		Slope	0.50	Thin layer	0.66		
		Seepage	0.03				
7D:							
Brushy----------	90	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.74	Thin layer	0.74	Depth to water	1.00
		Seepage	0.70				
		Slope	0.28				
7E:							
Brushy----------	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Thin layer	0.74	Depth to water	1.00
		Depth to bedrock	0.74				
		Seepage	0.70				
8D:							
Calvin----------	80	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.93	Depth to water	1.00
		Depth to bedrock	0.93				
		Slope	0.28				
8E:							
Calvin----------	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.93	Depth to water	1.00
		Slope	1.00				
		Depth to bedrock	0.93				
9D:							
Calvin----------	80	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.93	Depth to water	1.00
		Depth to bedrock	0.93				
		Slope	0.28				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
10E:							
Calvin----------	55	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.93	Depth to water	1.00
		Slope	1.00				
		Depth to bedrock	0.93				
Rough-----------	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	1.00	Seepage	0.12		
				Large stones content	0.03		
11D:							
Carbo-----------	60	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.98	Hard to pack	1.00	Depth to water	1.00
		Slope	0.18	Thin layer	0.98		
Rock outcrop----	25	Not rated		Not rated		Not rated	
11E:							
Carbo-----------	60	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.98	Hard to pack	1.00	Depth to water	1.00
		Slope	0.97	Thin layer	0.98		
Rock outcrop----	25	Not rated		Not rated		Not rated	
12D:							
Carbo-----------	60	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.98	Hard to pack	1.00	Depth to water	1.00
		Slope	0.12	Thin layer	0.98		
Rock outcrop----	25	Not rated		Not rated		Not rated	
13F:							
Culleoka--------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Piping	0.99	Depth to water	1.00
		Seepage	1.00	Thin layer	0.93		
		Depth to bedrock	0.93				
Berks-----------	35	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.91	Depth to water	1.00
		Slope	1.00	Seepage	0.25		
		Depth to bedrock	0.91				
14D:							
Dekalb----------	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.83	Depth to water	1.00
		Depth to bedrock	0.83	Large stones content	0.49		
		Slope	0.28	Seepage	0.03		
14E:							
Dekalb----------	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.83	Depth to water	1.00
		Slope	0.97	Large stones content	0.49		
		Depth to bedrock	0.83	Seepage	0.03		

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
15D:							
Dekalb----------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.83	Depth to water	1.00
		Depth to bedrock	0.83	Large stones content	0.49		
		Slope	0.18	Seepage	0.03		
Rock outcrop----	15	Not rated		Not rated		Not rated	
15F:							
Dekalb----------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.83	Depth to water	1.00
		Slope	1.00	Large stones content	0.49		
		Depth to bedrock	0.83	Seepage	0.03		
Rock outcrop----	15	Not rated		Not rated		Not rated	
16C:							
Frederick-------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.01	Depth to water	1.00
		Slope	0.01				
16D:							
Frederick-------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.01	Depth to water	1.00
		Slope	0.12				
17C:							
Frederick-------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.01	Depth to water	1.00
		Slope	0.01				
17D:							
Frederick-------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.01	Depth to water	1.00
		Slope	0.12				
17E:							
Frederick-------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.01	Depth to water	1.00
		Slope	0.50				
18C:							
Frederick-------	50	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.01	Depth to water	1.00
		Slope	0.01				
Watahala--------	35	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.88	Depth to water	1.00
		Slope	0.01				
18D:							
Frederick-------	50	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.01	Depth to water	1.00
		Slope	0.12				
Watahala--------	35	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.88	Depth to water	1.00
		Slope	0.12				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
19C:							
Gilpin----------	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.96	Depth to water	1.00
		Depth to bedrock	0.06	Thin layer	0.78		
		Slope	0.01				
19D:							
Gilpin----------	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.96	Depth to water	1.00
		Slope	0.12	Thin layer	0.78		
		Depth to bedrock	0.06				
20C:							
Jefferson-------	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.97	Depth to water	1.00
		Slope	0.01				
20D:							
Jefferson-------	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.97	Depth to water	1.00
		Slope	0.12				
21C:							
Lily------------	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.86	Depth to water	1.00
		Depth to bedrock	0.86	Seepage	0.03		
		Slope	0.01				
21D:							
Lily------------	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.86	Depth to water	1.00
		Depth to bedrock	0.86	Seepage	0.03		
		Slope	0.28				
21E:							
Lily------------	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.86	Depth to water	1.00
		Slope	0.97	Seepage	0.03		
		Depth to bedrock	0.86				
22A:							
Maurertown------	90	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Ponding	1.00	Cutbanks cave	1.00
				Depth to saturated zone	1.00	Slow refill	0.30
				Piping	0.10		
23B:							
Nicelytown------	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.01	Depth to saturated zone	1.00	Slow refill	0.99
						Cutbanks cave	0.10
				Piping	0.82		
23C:							
Nicelytown------	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.01	Depth to saturated zone	1.00	Slow refill	0.99
		Slope	0.01			Cutbanks cave	0.10
				Piping	0.82		

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
24B:							
Ogles-----------	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Large stones content	1.00	Cutbanks cave	1.00
				Seepage	0.08	Large stones content	1.00
						Depth to saturated zone	0.99
25A:							
Ogles-----------	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Large stones content	1.00	Cutbanks cave	1.00
				Seepage	0.08	Large stones content	1.00
						Depth to saturated zone	0.99
Pope------------	25	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.10	Depth to water	1.00
Philo-----------	20	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Ponding	1.00	Cutbanks cave	0.10
				Depth to saturated zone	0.95	Depth to saturated zone	0.02
				Seepage	0.03		
26C:							
Oriskany--------	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Large stones content	1.00	Depth to water	1.00
		Slope	0.01				
26D:							
Oriskany--------	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Large stones content	1.00	Depth to water	1.00
		Slope	0.28				
27E:							
Oriskany--------	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Large stones content	1.00	Depth to water	1.00
		Slope	0.72				
28A:							
Philo-----------	90	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Ponding	1.00	Cutbanks cave	0.10
				Depth to saturated zone	0.95	Depth to saturated zone	0.02
				Seepage	0.03		
29A:							
Pope------------	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.10	Depth to water	1.00
30:							
Quarries, limestone------	95	Not rated		Not rated		Not rated	

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
31F:							
Rock outcrop----	50	Not rated		Not rated		Not rated	
Beech Grove-----	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	1.00	Piping	1.00		
Benthole--------	20	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.49	Depth to water	1.00
		Seepage	0.73	Piping	0.37		
32C:							
Shelocta--------	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	0.99	Depth to water	1.00
		Slope	0.01				
32D:							
Shelocta--------	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	0.99	Depth to water	1.00
		Slope	0.12				
33B:							
Slabtown--------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.95	Depth to water	1.00
33C:							
Slabtown--------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.95	Depth to water	1.00
		Slope	0.01				
34B:							
Tumbling--------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.99	Depth to water	1.00
34C:							
Tumbling--------	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.99	Depth to water	1.00
		Slope	0.01				
34D:							
Tumbling--------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.99	Depth to water	1.00
		Slope	0.12				
35C:							
Tumbling--------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.99	Depth to water	1.00
		Slope	0.01				
35D:							
Tumbling--------	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.99	Depth to water	1.00
		Slope	0.12				
36C:							
Tumbling--------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.99	Depth to water	1.00
		Slope	0.01				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
36D:							
Tumbling--------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.99	Depth to water	1.00
		Slope	0.28				
37:							
Udorthents------	50	Not rated		Not rated		Not rated	
Urban land------	40	Not rated		Not rated		Not rated	
38C:							
Watahala--------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.88	Depth to water	1.00
		Slope	0.01				
38D:							
Watahala--------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.88	Depth to water	1.00
		Slope	0.12				
38E:							
Watahala--------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.88	Depth to water	1.00
		Slope	0.50				
38F:							
Watahala--------	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Thin layer	0.88	Depth to water	1.00
		Seepage	0.70				
39C:							
Watahala--------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.88	Depth to water	1.00
		Slope	0.01				
39D:							
Watahala--------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.88	Depth to water	1.00
		Slope	0.28				
39E:							
Watahala--------	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Thin layer	0.88	Depth to water	1.00
		Seepage	0.70				
40F:							
Weikert---------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Thin layer	1.00	Depth to water	1.00
		Depth to bedrock	1.00	Seepage	0.25		
		Seepage	0.70				
Rough-----------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Thin layer	1.00	Depth to water	1.00
		Depth to bedrock	1.00	Seepage	0.12		
				Large stones content	0.03		
Rock outcrop----	25	Not rated		Not rated		Not rated	

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
41D:							
Westmoreland----	45	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.96	Depth to water	1.00
		Depth to bedrock	0.19	Seepage	0.50		
		Slope	0.12	Thin layer	0.19		
Culleoka--------	40	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	0.99	Depth to water	1.00
		Depth to bedrock	0.93	Thin layer	0.93		
		Slope	0.12				
41E:							
Westmoreland----	45	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.96	Depth to water	1.00
		Slope	0.50	Seepage	0.50		
		Depth to bedrock	0.19	Thin layer	0.19		
Culleoka--------	40	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	0.99	Depth to water	1.00
		Depth to bedrock	0.93	Thin layer	0.93		
		Slope	0.50				
W:							
Water-----------	100	Not rated		Not rated		Not rated	

Table 15.—Engineering Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
1B:												
Alonzville------	0-6	Silt loam	CL, CL-ML	A-4	0	0	80-100	75-100	70-100	55-90	21-31	6-11
	6-11	Silt loam, loam, fine sandy loam	CL, CL-ML	A-4, A-6, A-2-4	0	0	80-100	75-100	55-100	30-90	23-31	7-11
	11-37	Silty clay loam, clay loam, sandy clay loam, loam	CL, CL-ML	A-2-4, A-6	0	0	80-100	75-100	60-100	25-95	23-38	7-15
	37-62	Very gravelly sandy loam, sandy clay loam, gravelly loam, fine sandy loam	SM, ML, CL-ML, CL	A-2-4, A-1, A-4, A-6	0	0	50-100	35-100	20-95	10-75	16-38	3-15
2A:												
Atkins----------	0-9	Fine sandy loam	SC-SM, CL-ML, ML	A-4, A-2-4	0	0-8	80-100	75-100	50-85	30-55	16-25	3-8
	9-37	Sandy loam, silty clay loam, gravelly loam	SC-SM, CL-ML	A-6, A-2-4	0	0-8	85-100	75-100	45-100	25-95	23-39	7-16
	37-62	Gravelly sandy loam, silty clay loam, very gravelly loam	SC-SM, SM, SC, CL-ML, ML, GP-GM	A-2-4, A-6, A-4, A-1	0	0-24	50-100	35-100	20-100	10-95	16-39	3-16

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
3D:												
Bailegap--------	0-4	Fine sandy loam	SC-SM, SM	A-4	0	0	65-95	55-90	40-75	20-50	16-25	3-8
	4-9	Fine sandy loam, loam, gravelly sandy loam	SC-SM, CL, ML, CL-ML	A-4, A-2-4, A-1, A-6	0	0	65-95	55-90	30-85	15-70	16-30	3-11
	9-28	Loam, clay loam, gravelly sandy clay loam	CL, CL-ML	A-4, A-2-4, A-6	0	0	65-95	55-90	45-90	20-75	23-39	7-16
	28-43	Clay loam, gravelly sandy clay loam, very gravelly loam	CL, CL-ML	A-6, A-4, A-2-4	0	0	45-95	30-90	25-90	10-75	23-34	7-13
	43-46	Bedrock			---	---	---	---	---	---	---	---
	46-56	Bedrock			---	---	---	---	---	---	---	---
4E:												
Bailegap--------	0-4	Fine sandy loam	SC-SM, SM	A-4	0	0	65-95	55-90	40-75	20-50	16-25	3-8
	4-9	Fine sandy loam, loam, gravelly sandy loam	SC-SM, CL, ML, CL-ML	A-4, A-2-4, A-1, A-6	0	0	65-95	55-90	30-85	15-70	16-30	3-11
	9-28	Loam, clay loam, gravelly sandy clay loam	CL, CL-ML	A-4, A-2-4, A-6	0	0	65-95	55-90	45-90	20-75	23-39	7-16
	28-43	Clay loam, gravelly sandy clay loam, very gravelly loam	CL, CL-ML	A-6, A-4, A-2-4	0	0	45-95	30-90	25-90	10-75	23-34	7-13
	43-46	Bedrock			---	---	---	---	---	---	---	---
	46-56	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
4E:												
Lily------------	0-7	Sandy loam	SC-SM, SM	A-2, A-4	0	0	70-100	55-100	35-70	15-40	12-25	1-8
	7-13	Sandy loam, loam, gravelly fine sandy loam	SC-SM, CL-ML, ML, SC, SM	A-2, A-4, A-1	0	0	70-100	55-100	35-95	15-75	12-25	1-8
	13-24	Clay loam, sandy clay loam, gravelly loam	CL, CL-ML	A-6, A-2-4	0	0	70-100	60-100	45-100	20-80	23-39	7-16
	24-30	Sandy loam, sandy clay loam, gravelly loam, gravelly loamy sand	SC, SC-SM, CL, CL-ML, SW-SC	A-2, A-4, A-6, A-1	0	0	65-100	50-100	25-95	10-75	21-39	6-16
	30-40	Bedrock			---	---	---	---	---	---	---	---
Dekalb----------	0-5	Channery sandy loam	SC-SM, SM	A-1, A-2-4	0	10-30	55-85	40-80	25-55	10-30	16-25	3-8
	5-24	Very channery sandy loam, channery loam, very channery fine sandy loam	SC-SM, CL-ML, SM, ML	A-1, A-2-4, A-4	0	15-35	60-90	45-85	25-80	15-65	13-23	1-7
	24-31	Extremely channery sandy loam, very channery sandy loam, extremely channery loamy sand	SC-SM, GW-GM, SM	A-1	0	50-65	45-70	25-60	15-45	5-25	12-21	1-6
	31-41	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
5C:												
Berks-----------	0-5	Very channery silt loam	SC-SM, SM, GC-GM	A-2-4	0	10-22	60-85	45-80	40-80	35-70	12-28	1-10
	5-15	Channery silt loam, very channery silt loam, extremely channery loam	SC-SM, CL, CL-ML, SM	A-4, A-2-4	0	10-22	60-85	45-80	40-80	30-70	12-28	1-10
	15-26	Very channery silt loam, channery silt loam, extremely channery loam	SC, SC-SM	A-2-6, A-6, A-2-4	0	22-37	45-75	25-65	25-65	15-60	21-31	6-11
	26-28	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, SC, GW-GC, SC-SM	A-1, A-2-4, A-4	0	30-55	40-70	20-65	15-65	10-60	16-25	3-8
	28-38	Bedrock			---	---	---	---	---	---	---	---
Weikert---------	0-3	Channery silt loam	SC-SM, CL-ML, CL	A-4	0	2-7	50-85	40-80	35-80	25-75	21-31	6-11
	3-6	Very channery silt loam	SC-SM, CL-ML, CL	A-4, A-1, A-2-4, A-6	0	4-13	55-90	40-85	35-85	25-75	21-31	6-11
	6-11	Extremely channery silt loam	SC, GC, GC-GM, SC-SM	A-2-4, A-6, A-1	0	14-18	50-65	30-55	25-55	20-50	21-31	6-11
	11-17	Extremely channery silt loam	GC-GM	A-2-4, A-6, A-1	0	42-50	40-55	15-40	15-40	10-40	21-31	6-11
	17-27	Bedrock			0	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
5D:												
Berks-----------	0-5	Very channery silt loam	SC-SM, SM, GC-GM	A-2-4	0	10-22	60-85	45-80	40-80	35-70	12-28	1-10
	5-15	Channery silt loam, very channery silt loam, extremely channery loam	SC-SM, CL, CL-ML, SM	A-4, A-2-4	0	10-22	60-85	45-80	40-80	30-70	12-28	1-10
	15-26	Very channery silt loam, channery silt loam, extremely channery loam	SC, SC-SM	A-2-6, A-6, A-2-4	0	22-37	45-75	25-65	25-65	15-60	21-31	6-11
	26-28	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, SC, GW-GC, SC-SM	A-1, A-2-4, A-4	0	30-55	40-70	20-65	15-65	10-60	16-25	3-8
	28-38	Bedrock			---	---	---	---	---	---	---	---
Weikert---------	0-3	Channery silt loam	SC-SM, CL-ML, CL	A-4	0	2-7	50-85	40-80	35-80	25-75	21-31	6-11
	3-6	Very channery silt loam	SC-SM, CL-ML, CL	A-4, A-1, A-2-4, A-6	0	4-13	55-90	40-85	35-85	25-75	21-31	6-11
	6-11	Extremely channery silt loam	SC, GC, GC-GM, SC-SM	A-2-4, A-6, A-1	0	14-18	50-65	30-55	25-55	20-50	21-31	6-11
	11-17	Extremely channery silt loam	GC-GM	A-2-4, A-6, A-1	0	42-50	40-55	15-40	15-40	10-40	21-31	6-11
	17-27	Bedrock			0	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
5E:												
Berks-----------	0-5	Very channery silt loam	SC-SM, SM, GC-GM	A-2-4	0	10-22	60-85	45-80	40-80	35-70	12-28	1-10
	5-15	Channery silt loam, very channery silt loam, extremely channery loam	SC-SM, CL, CL-ML, SM	A-4, A-2-4	0	10-22	60-85	45-80	40-80	30-70	12-28	1-10
	15-26	Very channery silt loam, channery silt loam, extremely channery loam	SC, SC-SM	A-2-6, A-6, A-2-4	0	22-37	45-75	25-65	25-65	15-60	21-31	6-11
	26-28	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, SC, GW-GC, SC-SM	A-1, A-2-4, A-4	0	30-55	40-70	20-65	15-65	10-60	16-25	3-8
	28-38	Bedrock			---	---	---	---	---	---	---	---
Weikert---------	0-3	Channery silt loam	SC-SM, CL-ML, CL	A-4	0	2-7	50-85	40-80	35-80	25-75	21-31	6-11
	3-6	Very channery silt loam	SC-SM, CL-ML, CL	A-4, A-1, A-2-4, A-6	0	4-13	55-90	40-85	35-85	25-75	21-31	6-11
	6-11	Extremely channery silt loam	SC, GC, GC-GM, SC-SM	A-2-4, A-6, A-1	0	14-18	50-65	30-55	25-55	20-50	21-31	6-11
	11-17	Extremely channery silt loam	GC-GM	A-2-4, A-6, A-1	0	42-50	40-55	15-40	15-40	10-40	21-31	6-11
	17-27	Bedrock			0	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
6D:												
Bland-----------	0-4	Silty clay loam	CL	A-7-6	0	0-6	85-100	80-100	75-100	70-95	36-44	16-22
	4-7	Silty clay, silty clay loam, silt loam	CL	A-7-6, A-4, A-6	0	0-8	90-100	85-100	75-100	60-95	26-48	8-25
	7-30	Silty clay, clay	CH, CL	A-7-6	0-5	0-10	90-100	85-100	75-100	65-95	48-66	25-39
	30-36	Channery clay, silty clay, very channery silty clay loam	CH, CL	A-7-6, A-6	0	0-34	70-100	55-100	50-100	45-95	39-57	18-32
	36-46	Bedrock			0	---	---	---	---	---	---	---
6E:												
Bland-----------	0-4	Silty clay loam	CL	A-7-6	0	0-6	85-100	80-100	75-100	70-95	36-44	16-22
	4-7	Silty clay, silty clay loam, silt loam	CL	A-7-6, A-4, A-6	0	0-8	90-100	85-100	75-100	60-95	26-48	8-25
	7-30	Silty clay, clay	CH, CL	A-7-6	0-5	0-10	90-100	85-100	75-100	65-95	48-66	25-39
	30-36	Channery clay, silty clay, very channery silty clay loam	CH, CL	A-7-6, A-6	0	0-34	70-100	55-100	50-100	45-95	39-57	18-32
	36-46	Bedrock			0	---	---	---	---	---	---	---
7D:												
Brushy----------	0-7	Extremely gravelly loam	GW-GM, GC-GM, SM, SC-SM	A-1, A-2-4	0	0	45-70	15-60	15-55	10-45	16-25	3-8
	7-13	Very gravelly loam, extremely gravelly silt loam, gravelly fine sandy loam	GC-GM, CL, ML, SM, SC-SM, CL-ML	A-2-4, A-4, A-1	0	0	45-70	15-60	10-60	5-50	16-30	3-11
	13-34	Very gravelly clay loam, gravelly sandy clay loam, extremely gravelly loam	SC, SC-SM, GW-GC	A-2-6, A-6, A-2-4	0	0	35-70	15-60	15-60	5-50	24-38	7-15
	34-44	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
7E:												
Brushy----------	0-7	Extremely gravelly loam	GW-GM, GC-GM, SM, SC-SM	A-1, A-2-4	0	0	45-70	15-60	15-55	10-45	16-25	3-8
	7-13	Very gravelly loam, extremely gravelly silt loam, gravelly fine sandy loam	GC-GM, CL, ML, SM, SC-SM, CL-ML	A-2-4, A-4, A-1	0	0	45-70	15-60	10-60	5-50	16-30	3-11
	13-34	Very gravelly clay loam, gravelly sandy clay loam, extremely gravelly loam	SC, SC-SM, GW-GC	A-2-6, A-6, A-2-4	0	0	35-70	15-60	15-60	5-50	24-38	7-15
	34-44	Bedrock			---	---	---	---	---	---	---	---
8D:												
Calvin----------	0-4	Channery silt loam	ML, CL, CL-ML, SC, SC-SM, SM	A-4	0	2-6	75-95	65-90	60-90	45-85	16-30	3-11
	4-9	Channery silt loam, loam	CL-ML, ML, CL, SM, SC-SM, SC	A-4, A-6	0	3-10	75-95	70-90	60-90	40-85	16-30	3-11
	9-21	Very channery silt loam, channery loam, channery silt loam	SC, SC-SM, CL, CL-ML	A-4, A-2-4, A-6	0	14-23	60-80	45-70	35-70	25-65	21-31	6-11
	21-27	Extremely channery silt loam, very channery silt loam, extremely channery loam	SC-SM, SC, GC, GC-GM	A-2-4, A-1, A-4, A-6	0	36-56	50-75	30-70	25-70	20-60	21-31	6-11
	27-37	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
8E:												
Calvin----------	0-4	Channery silt loam	ML, CL, CL-ML, SC, SC-SM, SM	A-4	0	2-6	75-95	65-90	60-90	45-85	16-30	3-11
	4-9	Channery silt loam, loam	CL-ML, ML, CL, SM, SC-SM, SC	A-4, A-6	0	3-10	75-95	70-90	60-90	40-85	16-30	3-11
	9-21	Very channery silt loam, channery loam, channery silt loam	SC, SC-SM, CL, CL-ML	A-4, A-2-4, A-6	0	14-23	60-80	45-70	35-70	25-65	21-31	6-11
	21-27	Extremely channery silt loam, very channery silt loam, extremely channery loam	SC-SM, SC, GC, GC-GM	A-2-4, A-1, A-4, A-6	0	36-56	50-75	30-70	25-70	20-60	21-31	6-11
	27-37	Bedrock			---	---	---	---	---	---	---	---
9D:												
Calvin----------	0-4	Channery silt loam	ML, CL, CL-ML, SC, SC-SM, SM	A-4	0	2-6	75-95	65-90	60-90	45-85	16-30	3-11
	4-9	Channery silt loam, loam	CL-ML, ML, CL, SM, SC-SM, SC	A-4, A-6	0	3-10	75-95	70-90	60-90	40-85	16-30	3-11
	9-21	Very channery silt loam, channery loam, channery silt loam	SC, SC-SM, CL, CL-ML	A-4, A-2-4, A-6	0	14-23	60-80	45-70	35-70	25-65	21-31	6-11
	21-27	Extremely channery silt loam, very channery silt loam, extremely channery loam	SC-SM, SC, GC, GC-GM	A-2-4, A-1, A-4, A-6	0	36-56	50-75	30-70	25-70	20-60	21-31	6-11
	27-37	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
10E:												
Calvin----------	0-4	Channery silt loam	ML, CL, CL-ML, SC, SC-SM, SM	A-4	0	2-6	75-95	65-90	60-90	45-85	16-30	3-11
	4-9	Channery silt loam, loam	CL-ML, ML, CL, SM, SC-SM, SC	A-4, A-6	0	3-10	75-95	70-90	60-90	40-85	16-30	3-11
	9-21	Very channery silt loam, channery loam, channery silt loam	SC, SC-SM, CL, CL-ML	A-4, A-2-4, A-6	0	14-23	60-80	45-70	35-70	25-65	21-31	6-11
	21-27	Extremely channery silt loam, very channery silt loam, extremely channery loam	SC-SM, SC, GC, GC-GM	A-2-4, A-1, A-4, A-6	0	36-56	50-75	30-70	25-70	20-60	21-31	6-11
	27-37	Bedrock			---	---	---	---	---	---	---	---
Rough-----------	0-3	Channery silt loam	CL-ML, SC, SM, CL, SC-SM, ML	A-4	0	5-20	50-80	35-75	30-75	25-70	16-30	3-11
	3-6	Very channery silt loam, very channery loam, extremely channery loam	SC, SC-SM, SM, CL, CL-ML, ML, GC-GM, GM, GC	A-4, A-1, A-2-4, A-6	0	25-40	45-70	30-65	25-65	15-55	16-31	3-11
	6-8	Extremely channery silt loam, very channery loam, extremely channery loam	SC, SM, SC-SM, GC-GM, GC, GM	A-2-4, A-1, A-4	0	50-60	35-60	15-45	15-45	10-40	16-30	3-11
	8-18	Bedrock			---	---	---	---	---	---	---	---
11D:												
Carbo-----------	0-5	Silty clay loam	CL	A-7-6	0	0	95-100	90-100	85-100	75-95	36-48	16-25
	5-24	Clay	CH	A-7-6, A-7-5	0	0	95-100	90-100	80-100	70-95	66-84	39-53
	24-34	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
11E:												
Carbo-----------	0-5	Silty clay loam	CL	A-7-6	0	0	95-100	90-100	85-100	75-95	36-48	16-25
	5-24	Clay	CH	A-7-6, A-7-5	0	0	95-100	90-100	80-100	70-95	66-84	39-53
	24-34	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
12D:												
Carbo-----------	0-5	Silty clay loam	CL	A-7-6	0	0	95-100	90-100	85-100	75-95	36-48	16-25
	5-24	Clay	CH	A-7-6, A-7-5	0	0	95-100	90-100	80-100	70-95	66-84	39-53
	24-34	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
13F:												
Culleoka--------	0-3	Gravelly silt loam	CL-ML, CL, SC-SM, SC	A-4, A-6	0	0-4	65-100	50-100	45-100	35-90	21-31	6-11
	3-11	Silt loam, silty clay loam, channery loam	CL, SC, CL-ML, SC-SM	A-4, A-2-4, A-6	0	5-12	70-90	60-85	50-85	35-80	23-39	7-16
	11-22	Channery silty clay loam, silt loam, channery loam	CL, CL-ML, SC, SC-SM	A-6, A-4	0	6-15	70-90	60-85	50-85	35-80	23-39	7-16
	22-27	Very channery silt loam, channery silt loam, extremely channery loam	SC, GC-GM, GC, CL-ML, SC-SM, CL	A-6, A-4, A-2-4	0	21-44	40-80	20-75	20-75	15-70	23-39	7-16
	27-37	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
13F:												
Berks	0-5	Very channery silt loam	SC-SM, SM, GC-GM	A-2-4	0	10-22	60-85	45-80	40-80	35-70	12-28	1-10
	5-15	Channery silt loam, very channery silt loam, extremely channery loam	SC-SM, CL, CL-ML, SM	A-4, A-2-4	0	10-22	60-85	45-80	40-80	30-70	12-28	1-10
	15-26	Very channery silt loam, channery silt loam, extremely channery loam	SC, SC-SM	A-2-6, A-6, A-2-4	0	22-37	45-75	25-65	25-65	15-60	21-31	6-11
	26-28	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, SC, GW-GC, SC-SM	A-1, A-2-4, A-4	0	30-55	40-70	20-65	15-65	10-60	16-25	3-8
	28-38	Bedrock			---	---	---	---	---	---	---	---
14D:												
Dekalb	0-5	Channery sandy loam	SC-SM, SM	A-1, A-2-4	0	10-30	55-85	40-80	25-55	10-30	16-25	3-8
	5-24	Very channery sandy loam, channery loam, very channery fine sandy loam	SC-SM, CL-ML, SM, ML	A-1, A-2-4, A-4	0	15-35	60-90	45-85	25-80	15-65	13-23	1-7
	24-31	Extremely channery sandy loam, very channery sandy loam, extremely channery loamy sand	SC-SM, GW-GM, SM	A-1	0	50-65	45-70	25-60	15-45	5-25	12-21	1-6
	31-41	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
14E:												
Dekalb----------	0-5	Channery sandy loam	SC-SM, SM	A-1, A-2-4	0	10-30	55-85	40-80	25-55	10-30	16-25	3-8
	5-24	Very channery sandy loam, channery loam, very channery fine sandy loam	SC-SM, CL-ML, SM, ML	A-1, A-2-4, A-4	0	15-35	60-90	45-85	25-80	15-65	13-23	1-7
	24-31	Extremely channery sandy loam, very channery sandy loam, extremely channery loamy sand	SC-SM, GW-GM, SM	A-1	0	50-65	45-70	25-60	15-45	5-25	12-21	1-6
	31-41	Bedrock			---	---	---	---	---	---	---	---
15D:												
Dekalb----------	0-5	Channery sandy loam	SC-SM, SM	A-1, A-2-4	0	10-30	55-85	40-80	25-55	10-30	16-25	3-8
	5-24	Very channery sandy loam, channery loam, very channery fine sandy loam	SC-SM, CL-ML, SM, ML	A-1, A-2-4, A-4	0	15-35	60-90	45-85	25-80	15-65	13-23	1-7
	24-31	Extremely channery sandy loam, very channery sandy loam, extremely channery loamy sand	SC-SM, GW-GM, SM	A-1	0	50-65	45-70	25-60	15-45	5-25	12-21	1-6
	31-41	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
15F:												
Dekalb----------	0-5	Channery sandy loam	SC-SM, SM	A-1, A-2-4	0	10-30	55-85	40-80	25-55	10-30	16-25	3-8
	5-24	Very channery sandy loam, channery loam, very channery fine sandy loam	SC-SM, CL-ML, SM, ML	A-1, A-2-4, A-4	0	15-35	60-90	45-85	25-80	15-65	13-23	1-7
	24-31	Extremely channery sandy loam, very channery sandy loam, extremely channery loamy sand	SC-SM, GW-GM, SM	A-1	0	50-65	45-70	25-60	15-45	5-25	12-21	1-6
	31-41	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
16C:												
Frederick-------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	80-100	75-100	70-100	55-90	21-31	6-11
	8-51	Clay, silty clay, silty clay loam	CL, CH	A-7-6, A-6, A-7-5	0	0	80-100	75-100	70-100	55-95	31-61	11-28
	51-72	Clay, silty clay	CH	A-7-5, A-7-6	0	0	80-100	75-100	70-100	55-95	43-75	18-36
16D:												
Frederick-------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	80-100	75-100	70-100	55-90	21-31	6-11
	8-51	Clay, silty clay, silty clay loam	CL, CH	A-7-6, A-6, A-7-5	0	0	80-100	75-100	70-100	55-95	31-61	11-28
	51-72	Clay, silty clay	CH	A-7-5, A-7-6	0	0	80-100	75-100	70-100	55-95	43-75	18-36

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
17C:												
Frederick-------	0-5	Gravelly silt loam	CL, CL-ML, ML	A-4, A-6	0	0	80-100	55-75	50-75	40-65	13-31	1-11
	5-13	Gravelly loam, silt loam	CL-ML, ML	A-4, A-6	0	0	70-100	60-100	60-100	35-90	13-31	1-11
	13-27	Silty clay, clay, clay loam, gravelly silty clay loam	CL, CH, MH	A-7	0	0	70-100	70-100	60-100	40-95	39-66	16-31
	27-62	Clay, silty clay, gravelly silty clay	MH, CH, CL	A-7	0	0	65-100	65-100	55-100	40-95	43-75	18-36
17D:												
Frederick-------	0-5	Gravelly silt loam	CL, CL-ML, ML	A-4, A-6	0	0	80-100	55-75	50-75	40-65	13-31	1-11
	5-13	Gravelly loam, silt loam	CL-ML, ML	A-4, A-6	0	0	70-100	60-100	60-100	35-90	13-31	1-11
	13-27	Silty clay, clay, clay loam, gravelly silty clay loam	CL, CH, MH	A-7	0	0	70-100	70-100	60-100	40-95	39-66	16-31
	27-62	Clay, silty clay, gravelly silty clay	MH, CH, CL	A-7	0	0	65-100	65-100	55-100	40-95	43-75	18-36
17E:												
Frederick-------	0-5	Gravelly silt loam	CL, CL-ML, ML	A-4, A-6	0	0	80-100	55-75	50-75	40-65	13-31	1-11
	5-13	Silt loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0	70-100	60-100	60-100	35-90	13-31	1-11
	13-27	Silty clay, clay, clay loam, gravelly silty clay loam	CL, CH, MH	A-7	0	0	70-100	70-100	60-100	40-95	39-66	16-31
	27-62	Clay, silty clay, gravelly silty clay	MH, CH, CL	A-7	0	0	65-100	65-100	55-100	40-95	43-75	18-36

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
18C:												
Frederick-------	0-5	Gravelly silt loam	CL, CL-ML, ML	A-4, A-6	0	0	80-100	55-75	50-75	40-65	13-31	1-11
	5-13	Gravelly loam, silt loam	CL-ML, ML	A-4, A-6	0	0	70-100	60-100	60-100	35-90	13-31	1-11
	13-27	Silty clay, clay, clay loam, gravelly silty clay loam	CL, CH, MH	A-7	0	0	70-100	70-100	60-100	40-95	39-66	16-31
	27-62	Clay, silty clay, gravelly silty clay	MH, CH, CL	A-7	0	0	65-100	65-100	55-100	40-95	43-75	18-36
Watahala--------	0-2	Gravelly silt loam	SC-SM, CL, CL-ML	A-2-4, A-4, A-6	0	0	55-85	40-80	35-80	30-75	23-31	7-11
	2-17	Gravelly silt loam, very gravelly loam, fine sandy loam, gravelly sandy loam	CL-ML, CL, SC-SM	A-6, A-2-4, A-4	0	0	55-85	40-80	35-80	30-70	21-31	6-11
	17-29	Gravelly loam, silty clay loam, very gravelly clay loam	SC-SM, CL, CL-ML	A-6, A-2-4, A-2-6	0	0	65-85	50-80	45-80	30-75	23-39	7-16
	29-62	Clay, silty clay, gravelly silty clay	MH, CL	A-7-6, A-7-5	0	0	60-100	50-100	45-100	40-95	43-75	18-33
18D:												
Frederick-------	0-5	Gravelly silt loam	CL, CL-ML, ML	A-4, A-6	0	0	80-100	55-75	50-75	40-65	13-31	1-11
	5-13	Silt loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0	70-100	60-100	60-100	35-90	13-31	1-11
	13-27	Silty clay, clay, clay loam, gravelly silty clay loam	CL, CH, MH	A-7	0	0	70-100	70-100	60-100	40-95	39-66	16-31
	27-62	Clay, silty clay, gravelly silty clay	MH, CH, CL	A-7	0	0	65-100	65-100	55-100	40-95	43-75	18-36

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
18D:												
Watahala--------	0-2	Gravelly silt loam	SC-SM, CL, CL-ML	A-2-4, A-4, A-6	0	0	55-85	40-80	35-80	30-75	23-31	7-11
	2-17	Gravelly silt loam, very gravelly loam, fine sandy loam, gravelly sandy loam	CL-ML, CL, SC-SM	A-6, A-2-4, A-4	0	0	55-85	40-80	35-80	30-70	21-31	6-11
	17-29	Gravelly loam, silty clay loam, very gravelly clay loam	SC-SM, CL, CL-ML	A-6, A-2-4, A-2-6	0	0	65-85	50-80	45-80	30-75	23-39	7-16
	29-62	Clay, silty clay, gravelly silty clay	MH, CL	A-7-6, A-7-5	0	0	60-100	50-100	45-100	40-95	43-75	18-33
19C:												
Gilpin----------	0-5	Silt loam	CL-ML, CL	A-4	0	2-7	70-95	60-90	55-90	40-85	21-31	6-11
	5-9	Silt loam, loam	CL, CL-ML	A-4, A-6	0	3-11	70-100	65-90	55-90	40-85	21-31	6-11
	9-26	Silty clay loam, channery silt loam, channery loam	CL, CL-ML	A-6, A-4	0	4-15	75-95	65-95	55-95	40-90	23-39	7-16
	26-33	Very channery silt loam, channery silty clay loam, very channery loam	SC, CL, CL-ML	A-4, A-2-4, A-6	0	27-40	60-80	45-70	40-70	30-65	21-39	6-16
	33-43	Bedrock			---	---	---	---	---	---	---	---
19D:												
Gilpin----------	0-5	Silt loam	CL-ML, CL	A-4	0	2-7	70-95	60-90	55-90	40-85	21-31	6-11
	5-9	Silt loam, loam	CL, CL-ML	A-4, A-6	0	3-11	70-100	65-90	55-90	40-85	21-31	6-11
	9-26	Silty clay loam, channery silt loam, channery loam	CL, CL-ML	A-6, A-4	0	4-15	75-95	65-95	55-95	40-90	23-39	7-16
	26-33	Very channery silt loam, channery silty clay loam, very channery loam	SC, CL, CL-ML	A-4, A-2-4, A-6	0	27-40	60-80	45-70	40-70	30-65	21-39	6-16
	33-43	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
20C:												
Jefferson-------	0-5	Cobbly loam	CL-ML, CL, SM, ML	A-4, A-6	0	5-30	80-100	70-95	60-90	45-70	16-30	3-11
	5-12	Loam, cobbly loam, cobbly fine sandy loam	CL-ML, CL, SM, ML	A-4, A-6, A-2-4	0	5-25	80-100	75-95	50-90	30-70	16-30	3-11
	12-32	Loam, cobbly clay loam, cobbly sandy clay loam	CL, CL-ML, SC	A-4, A-2-4, A-6	0	5-25	80-100	75-95	60-95	25-75	23-38	7-15
	32-61	Cobbly clay loam, sandy clay loam, cobbly loam, fine sandy loam, cobbly sandy loam	CL, CL-ML, SC	A-6, A-2-4	0	5-25	80-100	75-95	45-95	20-75	23-38	7-15
	61-70	Cobbly loam, sandy clay loam, cobbly fine sandy loam, very cobbly sandy loam	CL, GC, CL-ML, SC	A-4, A-1, A-2-4, A-6	0	15-45	40-85	25-80	20-75	5-60	21-31	6-11

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
20D:												
Jefferson-------	0-5	Cobbly loam	CL-ML, CL, SM, ML	A-4, A-6	0	5-30	80-100	70-95	60-90	45-70	16-30	3-11
	5-12	Loam, cobbly loam, cobbly fine sandy loam	CL-ML, CL, SM, ML	A-4, A-6, A-2-4	0	5-25	80-100	75-95	50-90	30-70	16-30	3-11
	12-32	Loam, cobbly clay loam, cobbly sandy clay loam	CL, CL-ML, SC	A-4, A-2-4, A-6	0	5-25	80-100	75-95	60-95	25-75	23-38	7-15
	32-61	Cobbly clay loam, sandy clay loam, cobbly loam, fine sandy loam, cobbly sandy loam	CL, CL-ML, SC	A-6, A-2-4	0	5-25	80-100	75-95	45-95	20-75	23-38	7-15
	61-70	Cobbly loam, sandy clay loam, cobbly fine sandy loam, very cobbly sandy loam	CL, GC, CL-ML, SC	A-4, A-1, A-2-4, A-6	0	15-45	40-85	25-80	20-75	5-60	21-31	6-11
21C:												
Lily------------	0-7	Sandy loam	SC-SM, SM	A-2, A-4	0	0	70-100	55-100	35-70	15-40	12-25	1-8
	7-13	Sandy loam, loam, gravelly fine sandy loam	SC-SM, CL-ML, ML, SC, SM	A-2, A-4, A-1	0	0	70-100	55-100	35-95	15-75	12-25	1-8
	13-24	Clay loam, sandy clay loam, gravelly loam	CL, CL-ML	A-6, A-2-4	0	0	70-100	60-100	45-100	20-80	23-39	7-16
	24-30	Sandy loam, sandy clay loam, gravelly loam, gravelly loamy sand	SC, SC-SM, CL, CL-ML, SW-SC	A-2, A-4, A-6, A-1	0	0	65-100	50-100	25-95	10-75	21-39	6-16
	30-40	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
21D:												
Lily------------	0-7	Sandy loam	SC-SM, SM	A-2, A-4	0	0	70-100	55-100	35-70	15-40	12-25	1-8
	7-13	Sandy loam, loam, gravelly fine sandy loam	SC-SM, CL-ML, ML, SC, SM	A-2, A-4, A-1	0	0	70-100	55-100	35-95	15-75	12-25	1-8
	13-24	Clay loam, sandy clay loam, gravelly loam	CL, CL-ML	A-6, A-2-4	0	0	70-100	60-100	45-100	20-80	23-39	7-16
	24-30	Sandy loam, sandy clay loam, gravelly loam, gravelly loamy sand	SC, SC-SM, CL, CL-ML, SW-SC	A-2, A-4, A-6, A-1	0	0	65-100	50-100	25-95	10-75	21-39	6-16
	30-40	Bedrock			---	---	---	---	---	---	---	---
21E:												
Lily------------	0-7	Sandy loam	SC-SM, SM	A-2, A-4	0	0	70-100	55-100	35-70	15-40	12-25	1-8
	7-13	Sandy loam, loam, gravelly fine sandy loam	SC-SM, CL-ML, ML, SC, SM	A-2, A-4, A-1	0	0	70-100	55-100	35-95	15-75	12-25	1-8
	13-24	Clay loam, sandy clay loam, gravelly loam	CL, CL-ML	A-6, A-2-4	0	0	70-100	60-100	45-100	20-80	23-39	7-16
	24-30	Sandy loam, sandy clay loam, gravelly loam, gravelly loamy sand	SC, SC-SM, CL, CL-ML, SW-SC	A-2, A-4, A-6, A-1	0	0	65-100	50-100	25-95	10-75	21-39	6-16
	30-40	Bedrock			---	---	---	---	---	---	---	---
22A:												
Maurertown------	0-6	Silt loam	CL, CL-ML	A-4	0	0	80-100	75-100	65-100	50-90	23-31	7-11
	6-18	Silty clay loam, silt loam, loam	CL, CL-ML	A-6, A-4	0	0	85-100	75-100	65-100	45-95	23-43	7-18
	18-41	Silty clay, clay, silty clay loam	CH, CL, MH	A-7-6, A-7-5	0	0	80-100	75-100	70-100	60-95	39-61	16-28
	41-62	Gravelly silty clay loam, clay, silty clay	CL, MH, CH	A-6, A-7-5, A-7-6	0	0	80-100	75-100	70-100	60-95	34-61	13-28

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
23B:												
Nicelytown------	0-6	Silt loam	CL, CL-ML	A-4	0	0-10	90-100	85-100	75-100	60-90	21-31	6-11
	6-18	Silt loam, loam, gravelly fine sandy loam	CL, CL-ML, SC-SM	A-4, A-6, A-2-4	0	0-10	90-100	85-100	60-100	35-90	21-31	6-11
	18-60	Silty clay loam, gravelly clay loam, silt loam, gravelly loam	CL, SC, SC-SM, CL-ML	A-6, A-4	0	0-25	80-100	75-100	60-100	45-95	23-39	7-16
	60-62	Very cobbly silty clay loam, cobbly clay loam, silt loam, very cobbly loam	CL, CL-ML	A-6, A-4	0	0-45	100	100	85-100	60-95	23-39	7-16
23C:												
Nicelytown------	0-6	Silt loam	CL, CL-ML	A-4	0	0-10	90-100	85-100	75-100	60-90	21-31	6-11
	6-18	Silt loam, loam, gravelly fine sandy loam	CL, CL-ML, SC-SM	A-4, A-6, A-2-4	0	0-10	90-100	85-100	60-100	35-90	21-31	6-11
	18-60	Silty clay loam, gravelly clay loam, silt loam, gravelly loam	CL, SC, SC-SM, CL-ML	A-6, A-4	0	0-25	80-100	75-100	60-100	45-95	23-39	7-16
	60-62	Very cobbly silty clay loam, cobbly clay loam, silt loam, very cobbly loam	CL, CL-ML	A-6, A-4	0	0-45	100	100	85-100	60-95	23-39	7-16

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
24B:												
Ogles-----------	0-6	Very stony loam	ML, CL-ML, SC-SM	A-4	25-35	30-35	75-100	70-100	60-95	40-75	13-23	1-7
	6-10	Very stony loam, extremely stony loam	ML, CL-ML, SC-SM	A-4	25-40	30-45	60-100	45-100	35-95	25-75	13-23	1-7
	10-23	Extremely stony sandy loam, very stony loam	SC-SM, CL-ML	A-2-4, A-1	25-40	30-45	60-100	45-100	25-95	15-75	12-23	1-7
	23-65	Extremely stony loamy sand, very stony sandy loam	SC-SM	A-2-4, A-1	25-45	30-45	70-100	60-100	30-75	8-40	12-23	1-7
25A:												
Ogles-----------	0-6	Very stony loam	ML, CL-ML, SC-SM	A-4	25-35	30-35	75-100	70-100	60-95	40-75	13-23	1-7
	6-10	Very stony loam, extremely stony loam	ML, CL-ML, SC-SM	A-4	25-40	30-45	60-100	45-100	35-95	25-75	13-23	1-7
	10-23	Extremely stony sandy loam, very stony loam	SC-SM, CL-ML	A-2-4, A-1	25-40	30-45	60-100	45-100	25-95	15-75	12-23	1-7
	23-65	Extremely stony loamy sand, very stony sandy loam	SC-SM	A-2-4, A-1	25-45	30-45	70-100	60-100	30-75	8-40	12-23	1-7
Pope------------	0-8	Fine sandy loam	SM, SC-SM	A-4, A-2-4	0	0	70-100	55-100	40-85	20-55	12-21	1-6
	8-45	Gravelly sandy loam, loam, fine sandy loam	SM, SC-SM, CL-ML, ML	A-1, A-2-4, A-4	0	0	70-100	60-100	35-95	20-75	12-23	1-7
	45-65	Very gravelly loamy sand, fine sandy loam, gravelly sandy loam	SP-SM, CL-ML, SC-SM, SM	A-1, A-2-4, A-4	0	0	40-100	20-100	10-85	5-55	12-23	1-7

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
25A:												
Philo-----------	0-5	Fine sandy loam	ML, CL-ML, SM	A-4	0	0-30	100	100	70-85	40-55	16-23	3-7
	5-44	Fine sandy loam, cobbly sandy loam, loam	SM, ML, CL-ML	A-4	0	0-25	100	100	60-95	30-75	16-23	3-7
	44-60	Very cobbly sandy loam, gravelly fine sandy loam, gravelly loam	SC-SM, CL-ML, GM, ML, SM	A-2, A-4	0	0-40	85-100	75-100	45-95	20-75	16-23	3-7
26C:												
Oriskany--------	0-6	Gravelly fine sandy loam	SM, SC-SM, GM, GW-GM	A-2-4	0	0	40-80	20-70	15-60	10-40	12-25	1-8
	6-14	Very cobbly fine sandy loam, very cobbly loam, extremely cobbly sandy loam	SM, SC, SC-SM, ML, CL-ML	A-2-4, A-6, A-4	0	30-80	100	100	60-95	30-75	13-31	1-11
	14-61	Extremely stony sandy clay loam, very stony clay loam, extremely stony loam	SC, SC-SM, CL, CL-ML	A-4, A-2-4, A-6	50-85	0	100	100	80-100	35-80	21-39	6-16
26D:												
Oriskany--------	0-6	Gravelly fine sandy loam	SM, SC-SM, GM, GW-GM	A-2-4	0	0	40-80	20-70	15-60	10-40	12-25	1-8
	6-14	Very cobbly fine sandy loam, very cobbly loam, extremely cobbly sandy loam	SM, SC, SC-SM, ML, CL-ML	A-2-4, A-6, A-4	0	30-80	100	100	60-95	30-75	13-31	1-11
	14-61	Extremely stony sandy clay loam, very stony clay loam, extremely stony loam	SC, SC-SM, CL, CL-ML	A-4, A-2-4, A-6	50-85	0	100	100	80-100	35-80	21-39	6-16

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
27E:												
Oriskany--------	0-6	Gravelly fine sandy loam	SM, SC-SM, GM, GW-GM	A-2-4	0	0	40-80	20-70	15-60	10-40	12-25	1-8
	6-14	Very cobbly fine sandy loam, very cobbly loam, extremely cobbly sandy loam	SM, SC, SC-SM, ML, CL-ML	A-2-4, A-6, A-4	0	30-80	100	100	60-95	30-75	13-31	1-11
	14-61	Extremely stony sandy clay loam, very stony clay loam, extremely stony loam	SC, SC-SM, CL, CL-ML	A-4, A-2-4, A-6	50-85	0	100	100	80-100	35-80	21-39	6-16
28A:												
Philo-----------	0-5	Fine sandy loam	ML, SM, CL-ML	A-4	0	0-30	100	100	70-85	40-55	16-23	3-7
	5-44	Fine sandy loam, cobbly sandy loam, loam	CL-ML, ML, SM	A-4	0	0-25	100	100	60-95	30-75	16-23	3-7
	44-60	Very cobbly sandy loam, gravelly fine sandy loam, loam, gravelly loam	SM, ML, GM, CL-ML, SC-SM	A-2, A-4	0	0-40	85-100	75-100	45-95	20-75	16-23	3-7
29A:												
Pope------------	0-8	Fine sandy loam	SM, SC-SM	A-4, A-2-4	0	0	70-100	55-100	40-85	20-55	12-21	1-6
	8-45	Gravelly sandy loam, loam, fine sandy loam	SM, SC-SM, CL-ML, ML	A-1, A-2-4, A-4	0	0	70-100	60-100	35-95	20-75	12-23	1-7
	45-65	Very gravelly loamy sand, fine sandy loam, gravelly sandy loam	SP-SM, CL-ML, SC-SM, SM	A-1, A-2-4, A-4	0	0	40-100	20-100	10-85	5-55	12-23	1-7
30.												
Quarries, limestone												

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
31F:												
Rock outcrop.												
Beech Grove-----	0-5	Silt loam	CL, SC-SM, CL-ML	A-4	0	0-30	80-100	70-100	65-100	50-90	21-36	4-16
	5-15	Bedrock			---	---	---	---	---	---	---	---
Benthole--------	0-3	Gravelly silt loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0-7	0-7	70-85	58-72	52-72	41-65	21-36	4-16
	3-37	Very cobbly silty clay loam, very gravelly silty clay loam, extremely cobbly loam	CL, SC, GC	A-6, A-7, A-2-4	0-12	30-40	45-70	42-66	36-66	25-63	28-44	9-22
	37-63	Very cobbly silty clay loam, very gravelly silty clay loam, extremely stony loam	CL, SC, GC	A-6, A-7, A-2-4	8-18	25-35	45-70	42-66	36-66	25-63	28-44	9-22
32C:												
Shelocta--------	0-8	Silt loam	CL-ML, CL, SC-SM, ML, SM, SC	A-4	0	0-5	60-95	50-95	45-95	35-85	16-30	3-11
	8-15	Silt loam, channery silt loam, loam	CL-ML, SC, SC-SM, SM, ML, CL	A-4, A-2-4, A-6	0	0-5	60-95	50-95	40-95	30-85	16-30	3-11
	15-46	Silt loam, silty clay loam, channery loam	CL, SC-SM, CL-ML, SC	A-4, A-2-4, A-6	0	0-5	65-95	55-90	45-90	30-85	23-38	7-15
	46-62	Channery silty clay loam, silt loam, channery loam	CL, CL-ML, SC, SC-SM	A-6, A-2-4	0	0-10	70-95	60-90	45-90	35-85	23-38	7-15

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
32D:												
Shelocta--------	0-8	Silt loam	CL-ML, CL, SC-SM, ML, SM, SC	A-4	0	0-5	60-95	50-95	45-95	35-85	16-30	3-11
	8-15	Silt loam, channery silt loam, loam	CL-ML, SC, SC-SM, SM, ML, CL	A-4, A-2-4, A-6	0	0-5	60-95	50-95	40-95	30-85	16-30	3-11
	15-46	Silt loam, silty clay loam, channery loam	CL, SC-SM, CL-ML, SC	A-4, A-2-4, A-6	0	0-5	65-95	55-90	45-90	30-85	23-38	7-15
	46-62	Channery silty clay loam, silt loam, channery loam	CL, CL-ML, SC, SC-SM	A-6, A-2-4	0	0-10	70-95	60-90	45-90	35-85	23-38	7-15
33B:												
Slabtown--------	0-18	Silt loam, gravelly loam, loam	CL	A-6	0	0	55-98	50-95	40-95	30-85	22-43	6-18
	18-44	Silt loam, gravelly silty clay loam, gravelly loam	CL	A-6	0	0	55-98	50-95	40-95	30-90	31-46	13-25
	44-75	Clay, silty clay, silty clay loam	CL, CH	A-7-6	0	0	95-100	90-100	80-100	70-95	45-69	25-44
33C:												
Slabtown--------	0-18	Silt loam, gravelly loam, loam	CL	A-6	0	0	55-98	50-95	40-95	30-85	22-43	6-18
	18-44	Silt loam, gravelly silty clay loam, gravelly loam	CL	A-6	0	0	55-98	50-95	40-95	30-90	31-46	13-25
	44-75	Clay, silty clay, silty clay loam	CH, CL	A-7-6	0	0	95-100	90-100	80-100	70-95	45-69	25-44

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
34B:												
Tumbling--------	0-9	Loam	CL-ML, CL	A-4	0	0-25	100	100	85-95	60-75	13-25	2-9
	9-44	Clay loam, clay, cobbly clay loam, sandy clay loam	CL	A-4, A-6	0	0-50	100	100	80-100	35-95	25-40	9-18
	44-62	Clay loam, clay, cobbly clay loam, sandy clay loam	CL	A-6, A-7	0-7	0-43	100	100	80-100	35-80	27-45	10-21
34C:												
Tumbling--------	0-9	Loam	CL-ML, CL	A-4	0	0-25	100	100	85-95	60-75	13-25	2-9
	9-44	Clay loam, clay, cobbly clay loam, sandy clay loam	CL	A-4, A-6	0	0-50	100	100	80-100	35-95	25-40	9-18
	44-62	Clay loam, clay, cobbly clay loam, sandy clay loam	CL	A-6, A-7	0-7	0-43	100	100	80-100	35-80	27-45	10-21
34D:												
Tumbling--------	0-9	Loam	CL-ML, CL	A-4	0	0-25	100	100	85-95	60-75	13-25	2-9
	9-44	Clay loam, clay, cobbly clay loam, sandy clay loam	CL	A-4, A-6	0	0-50	100	100	80-100	35-95	25-40	9-18
	44-62	Clay loam, clay, cobbly clay loam, sandy clay loam	CL	A-6, A-7	0-7	0-43	100	100	80-100	35-80	27-45	10-21

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
35C:												
Tumbling--------	0-9	Loam	CL-ML, CL	A-4	0	0-25	100	100	85-95	60-75	13-25	2-9
	9-44	Clay loam, clay, cobbly clay loam, sandy clay loam	CL	A-4, A-6	0	0-50	100	100	80-100	35-95	25-40	9-18
	44-62	Clay loam, clay, cobbly clay loam, sandy clay loam	CL	A-6, A-7	0-7	0-43	100	100	80-100	35-80	27-45	10-21
35D:												
Tumbling--------	0-9	Loam	CL-ML, CL	A-4	0	0-25	100	100	85-95	60-75	13-25	2-9
	9-44	Clay loam, clay, cobbly clay loam, sandy clay loam	CL	A-4, A-6	0	0-50	100	100	80-100	35-95	25-40	9-18
	44-62	Clay loam, clay, cobbly clay loam, sandy clay loam	CL	A-6, A-7	0-7	0-43	100	100	80-100	35-80	27-45	10-21
36C:												
Tumbling--------	0-9	Loam	CL-ML, CL	A-4	0	0-25	100	100	85-95	60-75	13-25	2-9
	9-44	Clay loam, clay, cobbly clay loam, sandy clay loam	CL	A-4, A-6	0	0-50	100	100	80-100	35-95	25-40	9-18
	44-62	Clay loam, clay, cobbly clay loam, sandy clay loam	CL	A-6, A-7	0-7	0-43	100	100	80-100	35-80	27-45	10-21

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
36D:												
Tumbling--------	0-9	Loam	CL-ML, CL	A-4	0	0-25	100	100	85-95	60-75	13-25	2-9
	9-44	Clay loam, clay, cobbly clay loam, sandy clay loam	CL	A-4, A-6	0	0-50	100	100	80-100	35-95	25-40	9-18
	44-62	Clay loam, clay, cobbly clay loam, sandy clay loam	CL	A-6, A-7	0-7	0-43	100	100	80-100	35-80	27-45	10-21
37. Udorthents-Urban land												
38C:												
Watahala--------	0-2	Gravelly silt loam	SC-SM, CL, CL-ML	A-2-4, A-4, A-6	0	0	55-85	40-80	35-80	30-75	23-31	7-11
	2-17	Gravelly silt loam, very gravelly loam, fine sandy loam, gravelly sandy loam	CL-ML, CL, SC-SM	A-6, A-2-4, A-4	0	0	55-85	40-80	35-80	30-70	21-31	6-11
	17-29	Gravelly loam, silty clay loam, very gravelly clay loam	SC-SM, CL, CL-ML	A-6, A-2-4, A-2-6	0	0	65-85	50-80	45-80	30-75	23-39	7-16
	29-62	Clay, silty clay, gravelly silty clay	MH, CL	A-7-6, A-7-5	0	0	60-100	50-100	45-100	40-95	43-75	18-33

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
38D:												
Watahala	0-2	Gravelly silt loam	SC-SM, CL, CL-ML	A-2-4, A-4, A-6	0	0	55-85	40-80	35-80	30-75	23-31	7-11
	2-17	Gravelly silt loam, very gravelly loam, fine sandy loam, gravelly sandy loam	CL-ML, CL, SC-SM	A-6, A-2-4, A-4	0	0	55-85	40-80	35-80	30-70	21-31	6-11
	17-29	Gravelly loam, silty clay loam, very gravelly clay loam	SC-SM, CL, CL-ML	A-6, A-2-4, A-2-6	0	0	65-85	50-80	45-80	30-75	23-39	7-16
	29-62	Clay, silty clay, gravelly silty clay	MH, CL	A-7-6, A-7-5	0	0	60-100	50-100	45-100	40-95	43-75	18-33
38E:												
Watahala	0-2	Gravelly silt loam	SC-SM, CL, CL-ML	A-2-4, A-4, A-6	0	0	55-85	40-80	35-80	30-75	23-31	7-11
	2-17	Gravelly silt loam, very gravelly loam, fine sandy loam, gravelly sandy loam	CL-ML, CL, SC-SM	A-6, A-2-4, A-4	0	0	55-85	40-80	35-80	30-70	21-31	6-11
	17-29	Gravelly loam, silty clay loam, very gravelly clay loam	SC-SM, CL, CL-ML	A-6, A-2-4, A-2-6	0	0	65-85	50-80	45-80	30-75	23-39	7-16
	29-62	Clay, silty clay, gravelly silty clay	MH, CL	A-7-6, A-7-5	0	0	60-100	50-100	45-100	40-95	43-75	18-33

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
38F:												
Watahala--------	0-2	Gravelly silt loam	SC-SM, CL, CL-ML	A-2-4, A-4, A-6	0	0	55-85	40-80	35-80	30-75	23-31	7-11
	2-17	Gravelly silt loam, very gravelly loam, fine sandy loam, gravelly sandy loam	CL-ML, CL, SC-SM	A-6, A-2-4, A-4	0	0	55-85	40-80	35-80	30-70	21-31	6-11
	17-29	Gravelly loam, silty clay loam, very gravelly clay loam	SC-SM, CL, CL-ML	A-6, A-2-4, A-2-6	0	0	65-85	50-80	45-80	30-75	23-39	7-16
	29-62	Clay, silty clay, gravelly silty clay	MH, CL	A-7-6, A-7-5	0	0	60-100	50-100	45-100	40-95	43-75	18-33
39C:												
Watahala--------	0-2	Gravelly silt loam	SC-SM, CL, CL-ML	A-2-4, A-4, A-6	0	0	55-85	40-80	35-80	30-75	23-31	7-11
	2-17	Gravelly silt loam, very gravelly loam, fine sandy loam, gravelly sandy loam	CL-ML, CL, SC-SM	A-6, A-2-4, A-4	0	0	55-85	40-80	35-80	30-70	21-31	6-11
	17-29	Gravelly loam, silty clay loam, very gravelly clay loam	SC-SM, CL, CL-ML	A-6, A-2-4, A-2-6	0	0	65-85	50-80	45-80	30-75	23-39	7-16
	29-62	Clay, silty clay, gravelly silty clay	MH, CL	A-7-6, A-7-5	0	0	60-100	50-100	45-100	40-95	43-75	18-33

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
39D:												
Watahala--------	0-2	Gravelly silt loam	SC-SM, CL, CL-ML	A-2-4, A-4, A-6	0	0	55-85	40-80	35-80	30-75	23-31	7-11
	2-17	Gravelly silt loam, very gravelly loam, fine sandy loam, gravelly sandy loam	CL-ML, CL, SC-SM	A-6, A-2-4, A-4	0	0	55-85	40-80	35-80	30-70	21-31	6-11
	17-29	Gravelly loam, silty clay loam, very gravelly clay loam	SC-SM, CL, CL-ML	A-6, A-2-4, A-2-6	0	0	65-85	50-80	45-80	30-75	23-39	7-16
	29-62	Clay, silty clay, gravelly silty clay	MH, CL	A-7-6, A-7-5	0	0	60-100	50-100	45-100	40-95	43-75	18-33
39E:												
Watahala--------	0-2	Gravelly silt loam	SC-SM, CL, CL-ML	A-2-4, A-4, A-6	0	0	55-85	40-80	35-80	30-75	23-31	7-11
	2-17	Gravelly silt loam, very gravelly loam, fine sandy loam, gravelly sandy loam	CL-ML, CL, SC-SM	A-6, A-2-4, A-4	0	0	55-85	40-80	35-80	30-70	21-31	6-11
	17-29	Gravelly loam, silty clay loam, very gravelly clay loam	SC-SM, CL, CL-ML	A-6, A-2-4, A-2-6	0	0	65-85	50-80	45-80	30-75	23-39	7-16
	29-62	Clay, silty clay, gravelly silty clay	MH, CL	A-7-6, A-7-5	0	0	60-100	50-100	45-100	40-95	43-75	18-33
40F:												
Weikert---------	0-3	Channery silt loam	SC-SM, CL-ML, CL	A-4	0	2-7	50-85	40-80	35-80	25-75	21-31	6-11
	3-6	Very channery silt loam	SC-SM, CL-ML, CL	A-4, A-1, A-2-4, A-6	0	4-13	55-90	40-85	35-85	25-75	21-31	6-11
	6-11	Extremely channery silt loam	SC, GC, GC-GM, SC-SM	A-2-4, A-6, A-1	0	14-18	50-65	30-55	25-55	20-50	21-31	6-11
	11-17	Extremely channery silt loam	GC-GM	A-2-4, A-6, A-1	0	42-50	40-55	15-40	15-40	10-40	21-31	6-11
	17-27	Bedrock			0	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
40F:												
Rough-----------	0-3	Channery silt loam	CL-ML, SC, SM, CL, SC-SM, ML	A-4	0	5-20	50-80	35-75	30-75	25-70	16-30	3-11
	3-6	Very channery silt loam, very channery loam, extremely channery loam	SC, SC-SM, SM, CL, CL-ML, ML, GC-GM, GM, GC	A-4, A-1, A-2-4, A-6	0	25-40	45-70	30-65	25-65	15-55	16-31	3-11
	6-8	Extremely channery silt loam, very channery loam, extremely channery loam	SC, SM, SC-SM, GC-GM, GC, GM	A-2-4, A-1, A-4	0	50-60	35-60	15-45	15-45	10-40	16-30	3-11
	8-18	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
41D:												
Westmoreland----	0-8	Silt loam	CL, CL-ML, SC-SM, SC	A-4, A-6	0	0-2	70-95	65-95	55-95	45-85	21-31	6-11
	8-16	Silt loam, channery silt loam, channery loam	CL, SC, CL-ML, SC-SM	A-4, A-6	0	0-4	75-95	65-95	55-95	40-85	23-31	7-11
	16-39	Silty clay loam, channery silty clay loam, channery loam	CL, CL-ML, SC-SM, SC	A-6, A-4	0	1-6	70-95	60-95	50-95	35-90	23-39	7-16
	39-47	Extremely channery silt loam, channery silt loam, very channery loam, extremely channery loam	GC, CL-ML, GW-GC, GC-GM, CL	A-2-4, A-4, A-6	0	23-53	30-75	30-75	10-75	5-70	23-31	7-11
	47-57	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
41D:												
Culleoka--------	0-3	Gravelly silt loam	CL-ML, CL, SC-SM, SC	A-4, A-6	0	0-4	65-100	50-100	45-100	35-90	21-31	6-11
	3-11	Silt loam, silty clay loam, channery loam	CL, SC, CL-ML, SC-SM	A-4, A-2-4, A-6	0	5-12	70-90	60-85	50-85	35-80	23-39	7-16
	11-22	Channery silty clay loam, silt loam, channery loam	CL, CL-ML, SC, SC-SM	A-6, A-4	0	6-15	70-90	60-85	50-85	35-80	23-39	7-16
	22-27	Very channery silt loam, channery silt loam, extremely channery loam	SC, GC-GM, GC, CL-ML, SC-SM, CL	A-6, A-4, A-2-4	0	21-44	40-80	20-75	20-75	15-70	23-39	7-16
	27-37	Bedrock			---	---	---	---	---	---	---	---
41E:												
Westmoreland----	0-8	Silt loam	CL, CL-ML, SC-SM, SC	A-4, A-6	0	0-2	70-95	65-95	55-95	45-85	21-31	6-11
	8-16	Silt loam, channery silt loam, channery loam	CL, SC, CL-ML, SC-SM	A-4, A-6	0	0-4	75-95	65-95	55-95	40-85	23-31	7-11
	16-39	Silty clay loam, channery silty clay loam, channery loam	CL, CL-ML, SC-SM, SC	A-6, A-4	0	1-6	70-95	60-95	50-95	35-90	23-39	7-16
	39-47	Extremely channery silt loam, channery silt loam, very channery loam, extremely channery loam	GC, CL-ML, GW-GC, GC-GM, CL	A-2-4, A-4, A-6	0	23-53	30-75	30-75	10-75	5-70	23-31	7-11
	47-57	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
41E:												
Culleoka--------	0-3	Gravelly silt loam	CL-ML, CL, SC-SM, SC	A-4, A-6	0	0-4	65-100	50-100	45-100	35-90	21-31	6-11
	3-11	Silt loam, silty clay loam, channery loam	CL, SC, CL-ML, SC-SM	A-4, A-2-4, A-6	0	5-12	70-90	60-85	50-85	35-80	23-39	7-16
	11-22	Silt loam, channery silty clay loam, channery loam	CL, CL-ML, SC, SC-SM	A-6, A-4	0	6-15	70-90	60-85	50-85	35-80	23-39	7-16
	22-27	Very channery silt loam, channery silt loam, extremely channery loam	SC, GC-GM, GC, CL-ML, SC-SM, CL	A-6, A-4, A-2-4	0	21-44	40-80	20-75	20-75	15-70	23-39	7-16
	27-37	Bedrock			---	---	---	---	---	---	---	---
W.												
Water												

Table 16.—Physical Soil Properties

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
1B:														
Alonzville-------	0-6	15-50	50-80	15-27	1.20-1.40	4.00-14.00	0.17-0.22	0.5-2.9	0.5-3.0	.28	.32	5	5	48
	6-11	15-75	10-65	18-27	1.20-1.40	4.00-14.00	0.12-0.22	0.5-2.9	0.0-0.5	.37	.43			
	11-37	15-75	15-55	18-34	1.20-1.50	4.00-14.00	0.10-0.19	1.5-2.9	0.0-0.5	.32	.37			
	37-62	15-75	10-50	10-34	1.20-1.40	4.00-14.00	0.05-0.19	1.0-2.9	0.0-0.5	.10	.24			
2A:														
Atkins-----------	0-9	25-80	10-65	10-20	1.20-1.40	4.00-14.00	0.12-0.16	0.5-2.0	1.0-5.0	.17	.17	5	3	86
	9-37	15-80	10-65	18-35	1.20-1.50	0.42-1.40	0.10-0.19	1.5-2.9	0.5-2.0	.15	.20			
	37-62	15-80	10-65	10-35	1.20-1.50	1.40-4.00	0.05-0.19	1.0-2.9	0.5-1.0	.15	.20			
3D:														
Bailegap---------	0-4	25-78	29-49	10-20	1.35-1.65	4.00-14.00	0.09-0.14	0.5-2.0	0.5-2.5	.17	.20	3	3	86
	4-9	25-82	5-49	10-25	1.35-1.65	4.00-14.00	0.09-0.17	1.0-2.5	0.0-0.5	.24	.24			
	9-28	21-78	5-48	18-35	1.35-1.65	4.00-14.00	0.07-0.17	1.5-2.9	0.0-0.5	.28	.32			
	28-43	21-78	5-48	18-30	1.35-1.65	4.00-14.00	0.04-0.17	1.5-2.9	0.0-0.5	.24	.32			
	43-46	---	---	---	---	1.40-14.00	---	---	---	---	---			
	46-56	---	---	---	---	0.00-4.00	---	---	---	---	---			
4E:														
Bailegap---------	0-4	25-78	29-49	10-20	1.35-1.65	4.00-14.00	0.09-0.14	0.5-2.0	0.5-2.5	.17	.20	3	3	86
	4-9	25-82	5-49	10-25	1.35-1.65	4.00-14.00	0.09-0.17	1.0-2.5	0.0-0.5	.24	.24			
	9-28	21-78	5-48	18-35	1.35-1.65	4.00-14.00	0.07-0.17	1.5-2.9	0.0-0.5	.28	.32			
	28-43	21-78	5-48	18-30	1.35-1.65	4.00-14.00	0.04-0.17	1.5-2.9	0.0-0.5	.24	.32			
	43-46	---	---	---	---	1.40-14.00	---	---	---	---	---			
	46-56	---	---	---	---	0.00-4.00	---	---	---	---	---			
Lily-------------	0-7	25-82	29-49	5-20	1.20-1.40	4.00-42.00	0.07-0.13	0.5-2.0	0.5-2.0	.24	.24	2	3	86
	7-13	25-82	5-49	5-25	1.25-1.35	4.00-42.00	0.07-0.19	0.5-2.0	0.0-1.0	.28	.28			
	13-24	21-78	5-49	18-35	1.25-1.55	14.00-42.00	0.08-0.19	1.5-2.9	0.0-0.5	.37	.37			
	24-30	25-82	5-49	10-35	1.25-1.55	14.00-42.00	0.05-0.19	1.0-2.9	0.0-0.5	.24	.24			
	30-40	---	---	---	---	0.00-4.00	---	---	---	---	---			
Dekalb-----------	0-5	25-82	29-49	10-20	1.20-1.50	14.00-141.00	0.05-0.10	0.2-1.5	0.5-2.0	.10	.20	2	3	56
	5-24	25-82	5-49	7-18	1.20-1.50	14.00-141.00	0.06-0.16	0.2-1.8	0.0-0.5	.10	.28			
	24-31	25-82	5-49	5-15	1.20-1.50	14.00-141.00	0.03-0.08	0.2-1.5	0.0-0.5	.05	.24			
	31-41	---	---	---	---	0.00-4.00	---	---	---	---	---			
5C:														
Berks------------	0-5	5-48	51-80	5-23	1.20-1.50	4.00-42.00	0.10-0.18	0.1-1.5	0.5-2.0	.15	.43	2	5	38
	5-15	5-51	29-80	5-23	1.20-1.50	4.00-42.00	0.09-0.18	0.1-2.0	0.0-0.5	.24	.49			
	15-26	5-51	29-80	15-27	1.20-1.60	4.00-42.00	0.05-0.14	1.0-2.5	0.0-0.5	.10	.43			
	26-28	5-51	29-80	10-20	1.20-1.60	14.00-42.00	0.04-0.14	1.0-2.0	0.0-0.5	.05	.49			
	28-38	---	---	---	---	1.40-42.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
5C:														
Weikert----------	0-3	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.08-0.18	0.5-1.5	0.5-2.0	.28	.49	1	5	48
	3-6	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.08-0.19	0.5-2.0	0.0-0.5	.20	.49			
	6-11	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.06-0.12	0.5-2.5	0.0-0.5	.10	.49			
	11-17	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.03-0.09	0.5-2.5	0.0-0.5	.05	.43			
	17-27	---	---	---	---	1.40-42.00	---	---	---	---	---			
5D:														
Berks------------	0-5	5-48	51-80	5-23	1.20-1.50	4.00-42.00	0.10-0.18	0.1-1.5	0.5-2.0	.15	.43	2	5	38
	5-15	5-51	29-80	5-23	1.20-1.50	4.00-42.00	0.09-0.18	0.1-2.0	0.0-0.5	.24	.49			
	15-26	5-51	29-80	15-27	1.20-1.60	4.00-42.00	0.05-0.14	1.0-2.5	0.0-0.5	.10	.43			
	26-28	5-51	29-80	10-20	1.20-1.60	14.00-42.00	0.04-0.14	1.0-2.0	0.0-0.5	.05	.49			
	28-38	---	---	---	---	1.40-42.00	---	---	---	---	---			
Weikert----------	0-3	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.08-0.18	0.5-1.5	0.5-2.0	.28	.49	1	5	48
	3-6	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.08-0.19	0.5-2.0	0.0-0.5	.20	.49			
	6-11	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.06-0.12	0.5-2.5	0.0-0.5	.10	.49			
	11-17	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.03-0.09	0.5-2.5	0.0-0.5	.05	.43			
	17-27	---	---	---	---	1.40-42.00	---	---	---	---	---			
5E:														
Berks------------	0-5	5-48	51-80	5-23	1.20-1.50	4.00-42.00	0.10-0.18	0.1-1.5	0.5-2.0	.15	.43	2	5	38
	5-15	5-51	29-80	5-23	1.20-1.50	4.00-42.00	0.09-0.18	0.1-2.0	0.0-0.5	.24	.49			
	15-26	5-51	29-80	15-27	1.20-1.60	4.00-42.00	0.05-0.14	1.0-2.5	0.0-0.5	.10	.43			
	26-28	5-51	29-80	10-20	1.20-1.60	14.00-42.00	0.04-0.14	1.0-2.0	0.0-0.5	.05	.49			
	28-38	---	---	---	---	1.40-42.00	---	---	---	---	---			
Weikert----------	0-3	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.08-0.18	0.5-1.5	0.5-2.0	.28	.49	1	5	48
	3-6	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.08-0.19	0.5-2.0	0.0-0.5	.20	.49			
	6-11	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.06-0.12	0.5-2.5	0.0-0.5	.10	.49			
	11-17	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.03-0.09	0.5-2.5	0.0-0.5	.05	.43			
	17-27	---	---	---	---	1.40-42.00	---	---	---	---	---			
6D:														
Bland------------	0-4	5-20	45-70	27-35	1.20-1.50	4.00-14.00	0.13-0.15	3.0-4.0	1.0-3.0	.32	.32	2	6	48
	4-7	15-20	45-75	15-50	1.20-1.50	1.40-4.00	0.12-0.22	3.0-5.0	0.0-0.5	.37	.37			
	7-30	2-40	35-60	40-60	1.30-1.60	1.40-4.00	0.10-0.14	4.0-5.5	0.0-0.5	.28	.28			
	30-36	2-20	15-70	30-50	1.30-1.60	1.40-4.00	0.07-0.15	3.0-5.0	0.0-0.5	.15	.28			
	36-46	---	---	---	---	0.00-4.00	---	---	---	---	---			
6E:														
Bland------------	0-4	5-20	45-70	27-35	1.20-1.50	4.00-14.00	0.13-0.15	3.0-4.0	1.0-3.0	.32	.32	2	6	48
	4-7	15-20	45-75	15-50	1.20-1.50	1.40-4.00	0.12-0.22	3.0-5.0	0.0-0.5	.37	.37			
	7-30	2-40	35-60	40-60	1.30-1.60	1.40-4.00	0.10-0.14	4.0-5.5	0.0-0.5	.28	.28			
	30-36	2-20	15-70	30-50	1.30-1.60	1.40-4.00	0.07-0.15	3.0-5.0	0.0-0.5	.15	.28			
	36-46	---	---	---	---	0.00-4.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
7D:														
Brushy-----------	0-7	25-51	29-49	10-20	1.20-1.40	4.00-14.00	0.03-0.11	0.5-2.9	0.5-2.0	.05	.43	2	8	0
	7-13	25-82	5-51	10-25	1.20-1.40	4.00-14.00	0.02-0.13	1.0-2.5	0.0-1.0	.10	.43			
	13-34	21-78	5-49	19-34	1.40-1.60	4.00-14.00	0.02-0.11	1.5-2.9	0.0-0.5	.15	.43			
	34-44	---	---	---	---	0.00-4.00	---	---	---	---	---			
7E:														
Brushy-----------	0-7	25-51	29-49	10-20	1.20-1.40	4.00-14.00	0.03-0.11	0.5-2.9	0.5-2.0	.05	.43	2	8	0
	7-13	25-82	5-51	10-25	1.20-1.40	4.00-14.00	0.02-0.13	1.0-2.5	0.0-1.0	.10	.43			
	13-34	21-78	5-49	19-34	1.40-1.60	4.00-14.00	0.02-0.11	1.5-2.9	0.0-0.5	.15	.43			
	34-44	---	---	---	---	0.00-4.00	---	---	---	---	---			
8D:														
Calvin-----------	0-4	25-51	29-80	10-25	1.20-1.40	14.00-42.00	0.14-0.20	0.1-1.5	0.0-1.0	.28	.43	2	5	48
	4-9	5-51	29-80	10-25	1.20-1.40	14.00-42.00	0.13-0.20	1.0-2.0	0.0-0.5	.28	.49			
	9-21	5-51	29-80	15-27	1.40-1.60	14.00-42.00	0.09-0.15	1.5-2.5	0.0-0.5	.17	.49			
	21-27	5-51	29-80	15-27	1.40-1.60	14.00-42.00	0.06-0.15	1.5-2.7	0.0-0.5	.10	.55			
	27-37	---	---	---	---	1.40-42.00	---	---	---	---	---			
8E:														
Calvin-----------	0-4	25-51	29-80	10-25	1.20-1.40	14.00-42.00	0.14-0.20	0.1-1.5	0.0-1.0	.28	.43	2	5	48
	4-9	5-51	29-80	10-25	1.20-1.40	14.00-42.00	0.13-0.20	1.0-2.0	0.0-0.5	.28	.49			
	9-21	5-51	29-80	15-27	1.40-1.60	14.00-42.00	0.09-0.15	1.5-2.5	0.0-0.5	.17	.49			
	21-27	5-51	29-80	15-27	1.40-1.60	14.00-42.00	0.06-0.15	1.5-2.7	0.0-0.5	.10	.55			
	27-37	---	---	---	---	1.40-42.00	---	---	---	---	---			
9D:														
Calvin-----------	0-4	25-51	29-80	10-25	1.20-1.40	14.00-42.00	0.14-0.20	0.1-1.5	0.0-1.0	.28	.43	2	5	48
	4-9	5-51	29-80	10-25	1.20-1.40	14.00-42.00	0.13-0.20	1.0-2.0	0.0-0.5	.28	.49			
	9-21	5-51	29-80	15-27	1.40-1.60	14.00-42.00	0.09-0.15	1.5-2.5	0.0-0.5	.17	.49			
	21-27	5-51	29-80	15-27	1.40-1.60	14.00-42.00	0.06-0.15	1.5-2.7	0.0-0.5	.10	.55			
	27-37	---	---	---	---	1.40-42.00	---	---	---	---	---			
10E:														
Calvin-----------	0-4	25-51	29-80	10-25	1.20-1.40	14.00-42.00	0.14-0.20	0.1-1.5	0.0-1.0	.28	.43	2	5	48
	4-9	5-51	29-80	10-25	1.20-1.40	14.00-42.00	0.13-0.20	1.0-2.0	0.0-0.5	.28	.49			
	9-21	5-51	29-80	15-27	1.40-1.60	14.00-42.00	0.09-0.15	1.5-2.5	0.0-0.5	.17	.49			
	21-27	5-51	29-80	15-27	1.40-1.60	14.00-42.00	0.06-0.15	1.5-2.7	0.0-0.5	.10	.55			
	27-37	---	---	---	---	1.40-42.00	---	---	---	---	---			
Rough------------	0-3	15-35	50-70	10-25	1.20-1.50	4.00-42.00	0.08-0.17	0.5-1.5	0.5-2.0	.32	.55	1	5	56
	3-6	10-35	35-70	10-27	1.20-1.60	4.00-42.00	0.06-0.14	0.5-2.7	0.0-0.5	.20	.55			
	6-8	10-45	35-70	10-25	1.20-1.60	14.00-42.00	0.03-0.10	0.5-2.9	0.0-0.5	.05	.55			
	8-18	---	---	---	---	0.01-4.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
11D:														
Carbo------------	0-5	5-19	42-70	27-40	1.20-1.40	4.00-14.00	0.14-0.15	3.0-4.0	0.5-2.5	.32	.32	2	4	86
	5-24	5-44	5-39	60-80	1.30-1.45	0.42-1.40	0.11-0.12	6.0-8.9	0.0-0.5	.17	.17			
	24-34	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														
11E:														
Carbo------------	0-5	5-19	42-70	27-40	1.20-1.40	4.00-14.00	0.14-0.15	3.0-4.0	0.5-2.5	.32	.32	2	4	86
	5-24	5-44	5-39	60-80	1.30-1.45	0.42-1.40	0.11-0.12	6.0-8.9	0.0-0.5	.17	.17			
	24-34	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														
12D:														
Carbo------------	0-5	5-19	42-70	27-40	1.20-1.40	4.00-14.00	0.14-0.15	3.0-4.0	0.5-2.5	.32	.32	2	4	86
	5-24	5-44	5-39	60-80	1.30-1.45	0.42-1.40	0.11-0.12	6.0-8.9	0.0-0.5	.17	.17			
	24-34	---	---	---	---	0.00-0.42	---	---	---	---	---			
Rock outcrop.														
13F:														
Culleoka---------	0-3	5-48	51-80	15-27	1.20-1.40	4.00-42.00	0.11-0.22	1.0-2.0	1.0-4.0	.24	.37	2	5	48
	3-11	5-51	29-80	18-35	1.20-1.50	14.00-42.00	0.09-0.19	1.5-2.5	0.0-0.5	.37	.49			
	11-22	5-51	29-80	18-35	1.20-1.50	4.00-42.00	0.09-0.19	1.5-2.9	0.0-0.5	.24	.43			
	22-27	5-51	29-80	18-35	1.20-1.50	4.00-42.00	0.04-0.17	1.0-2.9	0.0-0.5	.10	.43			
	27-37	---	---	---	---	1.40-42.00	---	---	---	---	---			
Berks------------	0-5	5-48	51-80	5-23	1.20-1.50	4.00-42.00	0.10-0.18	0.1-1.5	0.5-2.0	.15	.43	2	5	38
	5-15	5-51	29-80	5-23	1.20-1.50	4.00-42.00	0.09-0.18	0.1-2.0	0.0-0.5	.24	.49			
	15-26	5-51	29-80	15-27	1.20-1.60	4.00-42.00	0.05-0.14	1.0-2.5	0.0-0.5	.10	.43			
	26-28	5-51	29-80	10-20	1.20-1.60	14.00-42.00	0.04-0.14	1.0-2.0	0.0-0.5	.05	.49			
	28-38	---	---	---	---	1.40-42.00	---	---	---	---	---			
14D:														
Dekalb-----------	0-5	25-82	29-49	10-20	1.20-1.50	14.00-141.00	0.05-0.10	0.2-1.5	0.5-2.0	.10	.20	2	3	56
	5-24	25-82	5-49	7-18	1.20-1.50	14.00-141.00	0.06-0.16	0.2-1.8	0.0-0.5	.10	.28			
	24-31	25-82	5-49	5-15	1.20-1.50	14.00-141.00	0.03-0.08	0.2-1.5	0.0-0.5	.05	.24			
	31-41	---	---	---	---	0.00-4.00	---	---	---	---	---			
14E:														
Dekalb-----------	0-5	25-82	29-49	10-20	1.20-1.50	14.00-141.00	0.05-0.10	0.2-1.5	0.5-2.0	.10	.20	2	3	56
	5-24	25-82	5-49	7-18	1.20-1.50	14.00-141.00	0.06-0.16	0.2-1.8	0.0-0.5	.10	.28			
	24-31	25-82	5-49	5-15	1.20-1.50	14.00-141.00	0.03-0.08	0.2-1.5	0.0-0.5	.05	.24			
	31-41	---	---	---	---	0.00-4.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
15D:														
Dekalb-----------	0-5	25-82	29-49	10-20	1.20-1.50	14.00-141.00	0.05-0.10	0.2-1.5	0.5-2.0	.10	.20	2	3	56
	5-24	25-82	5-49	7-18	1.20-1.50	14.00-141.00	0.06-0.16	0.2-1.8	0.0-0.5	.10	.28			
	24-31	25-82	5-49	5-15	1.20-1.50	14.00-141.00	0.03-0.08	0.2-1.5	0.0-0.5	.05	.24			
	31-41	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														
15F:														
Dekalb-----------	0-5	25-82	29-49	10-20	1.20-1.50	14.00-141.00	0.05-0.10	0.2-1.5	0.5-2.0	.10	.20	2	3	56
	5-24	25-82	5-49	7-18	1.20-1.50	14.00-141.00	0.06-0.16	0.2-1.8	0.0-0.5	.10	.28			
	24-31	25-82	5-49	5-15	1.20-1.50	14.00-141.00	0.03-0.08	0.2-1.5	0.0-0.5	.05	.24			
	31-41	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														
16C:														
Frederick--------	0-8	5-48	51-80	15-27	1.25-1.50	14.00-42.00	0.17-0.22	1.5-2.7	0.5-2.5	.24	.28	5	6	48
	8-51	2-44	10-70	27-60	1.20-1.50	4.00-14.00	0.09-0.15	3.0-5.5	0.0-0.5	.15	.15			
	51-72	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.09-0.14	3.5-5.9	0.0-0.5	.17	.17			
16D:														
Frederick--------	0-8	5-48	51-80	15-27	1.25-1.50	14.00-42.00	0.17-0.22	1.5-2.7	0.5-2.5	.24	.28	5	6	48
	8-51	2-44	10-70	27-60	1.20-1.50	4.00-14.00	0.09-0.15	3.0-5.5	0.0-0.5	.15	.15			
	51-72	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.09-0.14	3.5-5.9	0.0-0.5	.17	.17			
17C:														
Frederick--------	0-5	5-48	51-80	7-27	1.25-1.50	14.00-42.00	0.12-0.17	1.0-2.7	0.5-2.5	.24	.32	5	6	38
	5-13	5-25	42-70	7-27	1.30-1.60	4.00-14.00	0.11-0.22	1.0-2.5	0.5-2.0	.28	.37			
	13-27	2-44	10-70	35-65	1.20-1.50	4.00-14.00	0.07-0.15	3.5-5.9	0.0-0.5	.24	.24			
	27-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.07-0.14	3.5-5.9	0.0-0.5	.05	.05			
17D:														
Frederick--------	0-5	5-48	51-80	7-27	1.25-1.50	14.00-42.00	0.12-0.17	1.0-2.7	0.5-2.5	.24	.32	5	6	38
	5-13	5-25	42-70	7-27	1.30-1.60	4.00-14.00	0.11-0.22	1.0-2.5	0.5-2.0	.28	.37			
	13-27	2-44	10-70	35-65	1.20-1.50	4.00-14.00	0.07-0.15	3.5-5.9	0.0-0.5	.24	.24			
	27-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.07-0.14	3.5-5.9	0.0-0.5	.05	.05			
17E:														
Frederick--------	0-5	5-48	51-80	7-27	1.25-1.50	14.00-42.00	0.12-0.17	1.0-2.7	0.5-2.5	.24	.32	5	6	38
	5-13	5-25	42-70	7-27	1.30-1.60	4.00-14.00	0.11-0.22	1.0-2.5	0.5-2.0	.28	.37			
	13-27	2-44	10-70	35-65	1.20-1.50	4.00-14.00	0.07-0.15	3.5-5.9	0.0-0.5	.24	.24			
	27-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.07-0.14	3.5-5.9	0.0-0.5	.05	.05			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
18C:														
Frederick--------	0-5	5-48	51-80	7-27	1.25-1.50	14.00-42.00	0.12-0.17	1.0-2.7	0.5-2.5	.24	.32	5	6	38
	5-13	5-25	42-70	7-27	1.30-1.60	4.00-14.00	0.11-0.22	1.0-2.5	0.5-2.0	.28	.37			
	13-27	2-44	10-70	35-65	1.20-1.50	4.00-14.00	0.07-0.15	3.5-5.9	0.0-0.5	.24	.24			
	27-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.07-0.14	3.5-5.9	0.0-0.5	.05	.05			
Watahala---------	0-2	2-48	51-80	18-27	1.25-1.45	14.00-42.00	0.09-0.18	1.5-2.5	0.5-2.5	.20	.37	4	5	48
	2-17	2-51	29-80	15-27	1.20-1.50	14.00-42.00	0.09-0.18	1.0-2.5	0.0-0.5	.28	.49			
	17-29	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.07-0.15	3.5-4.5	0.0-0.5	.15	.32			
	29-62	2-44	2-58	40-75	1.20-1.40	1.40-14.00	0.06-0.14	3.5-5.9	0.0-0.5	.15	.17			
18D:														
Frederick--------	0-5	5-48	51-80	7-27	1.25-1.50	14.00-42.00	0.12-0.17	1.0-2.7	0.5-2.5	.24	.32	5	6	38
	5-13	5-25	42-70	7-27	1.30-1.60	4.00-14.00	0.11-0.22	1.0-2.5	0.5-2.0	.28	.37			
	13-27	2-44	10-70	35-65	1.20-1.50	4.00-14.00	0.07-0.15	3.5-5.9	0.0-0.5	.24	.24			
	27-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.07-0.14	3.5-5.9	0.0-0.5	.05	.05			
Watahala---------	0-2	2-48	51-80	18-27	1.25-1.45	14.00-42.00	0.09-0.18	1.5-2.5	0.5-2.5	.20	.37	4	5	48
	2-17	2-51	29-80	15-27	1.20-1.50	14.00-42.00	0.09-0.18	1.0-2.5	0.0-0.5	.28	.49			
	17-29	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.07-0.15	3.5-4.5	0.0-0.5	.15	.32			
	29-62	2-44	2-58	40-75	1.20-1.40	1.40-14.00	0.06-0.14	3.5-5.9	0.0-0.5	.15	.17			
19C:														
Gilpin-----------	0-5	10-35	51-80	15-27	1.20-1.40	4.00-14.00	0.13-0.20	1.5-2.0	0.5-2.5	.37	.43	3	5	56
	5-9	10-50	29-80	15-27	1.20-1.40	4.00-14.00	0.12-0.20	1.5-2.5	0.0-1.0	.43	.49			
	9-26	10-50	29-80	18-35	1.20-1.50	4.00-14.00	0.10-0.21	1.5-2.9	0.0-0.5	.37	.43			
	26-33	10-50	29-80	15-35	1.20-1.50	4.00-14.00	0.07-0.15	1.0-2.9	0.0-0.5	.10	.43			
	33-43	---	---	---	---	1.40-42.00	---	---	---	---	---			
19D:														
Gilpin-----------	0-5	10-35	51-80	15-27	1.20-1.40	4.00-14.00	0.13-0.20	1.5-2.0	0.5-2.5	.37	.43	3	5	56
	5-9	10-50	29-80	15-27	1.20-1.40	4.00-14.00	0.12-0.20	1.5-2.5	0.0-1.0	.43	.49			
	9-26	10-50	29-80	18-35	1.20-1.50	4.00-14.00	0.10-0.21	1.5-2.9	0.0-0.5	.37	.43			
	26-33	10-50	29-80	15-35	1.20-1.50	4.00-14.00	0.07-0.15	1.0-2.9	0.0-0.5	.10	.43			
	33-43	---	---	---	---	1.40-42.00	---	---	---	---	---			
20C:														
Jefferson--------	0-5	30-80	5-50	10-25	1.30-1.50	14.00-42.00	0.13-0.18	0.5-1.5	0.5-2.0	.17	.28	3	5	56
	5-12	30-80	5-50	10-25	1.30-1.65	14.00-42.00	0.12-0.18	0.5-1.5	0.5-1.0	.24	.32			
	12-32	20-65	5-50	18-34	1.30-1.65	14.00-42.00	0.10-0.18	1.0-2.0	0.0-0.5	.20	.28			
	32-61	20-80	5-50	18-34	1.30-1.65	14.00-42.00	0.10-0.18	1.5-2.9	0.0-0.5	.15	.28			
	61-70	20-80	5-50	15-27	1.30-1.65	14.00-42.00	0.03-0.15	1.0-2.7	0.0-0.5	.17	.32			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Kf	T	Wind erodibility group	Wind erodibility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
20D:														
Jefferson--------	0-5	30-80	5-50	10-25	1.30-1.50	14.00-42.00	0.13-0.18	0.5-1.5	0.5-2.0	.17	.28	3	5	56
	5-12	30-80	5-50	10-25	1.30-1.65	14.00-42.00	0.12-0.18	0.5-1.5	0.5-1.0	.24	.32			
	12-32	20-65	5-50	18-34	1.30-1.65	14.00-42.00	0.10-0.18	1.0-2.0	0.0-0.5	.20	.28			
	32-61	20-80	5-50	18-34	1.30-1.65	14.00-42.00	0.10-0.18	1.5-2.9	0.0-0.5	.15	.28			
	61-70	20-80	5-50	15-27	1.30-1.65	14.00-42.00	0.03-0.15	1.0-2.7	0.0-0.5	.17	.32			
21C:														
Lily-------------	0-7	25-82	29-49	5-20	1.20-1.40	4.00-42.00	0.07-0.13	0.5-2.0	0.5-2.0	.24	.24	2	3	86
	7-13	25-82	5-49	5-25	1.25-1.35	4.00-42.00	0.07-0.19	0.5-2.0	0.0-1.0	.28	.28			
	13-24	21-78	5-49	18-35	1.25-1.55	14.00-42.00	0.08-0.19	1.5-2.9	0.0-0.5	.37	.37			
	24-30	25-82	5-49	10-35	1.25-1.55	14.00-42.00	0.05-0.19	1.0-2.9	0.0-0.5	.24	.24			
	30-40	---	---	---	---	0.00-4.00	---	---	---	---	---			
21D:														
Lily-------------	0-7	25-82	29-49	5-20	1.20-1.40	4.00-42.00	0.07-0.13	0.5-2.0	0.5-2.0	.24	.24	2	3	86
	7-13	25-82	5-49	5-25	1.25-1.35	4.00-42.00	0.07-0.19	0.5-2.0	0.0-1.0	.28	.28			
	13-24	21-78	5-49	18-35	1.25-1.55	14.00-42.00	0.08-0.19	1.5-2.9	0.0-0.5	.37	.37			
	24-30	25-82	5-49	10-35	1.25-1.55	14.00-42.00	0.05-0.19	1.0-2.9	0.0-0.5	.24	.24			
	30-40	---	---	---	---	0.00-4.00	---	---	---	---	---			
21E:														
Lily-------------	0-7	25-82	29-49	5-20	1.20-1.40	4.00-42.00	0.07-0.13	0.5-2.0	0.5-2.0	.24	.24	2	3	86
	7-13	25-82	5-49	5-25	1.25-1.35	4.00-42.00	0.07-0.19	0.5-2.0	0.0-1.0	.28	.28			
	13-24	21-78	5-49	18-35	1.25-1.55	14.00-42.00	0.08-0.19	1.5-2.9	0.0-0.5	.37	.37			
	24-30	25-82	5-49	10-35	1.25-1.55	14.00-42.00	0.05-0.19	1.0-2.9	0.0-0.5	.24	.24			
	30-40	---	---	---	---	0.00-4.00	---	---	---	---	---			
22A:														
Maurertown-------	0-6	5-48	51-80	18-27	1.25-1.35	4.00-14.00	0.17-0.22	3.0-4.0	2.0-4.0	.28	.28	5	6	48
	6-18	5-48	42-80	18-40	1.25-1.35	4.00-14.00	0.11-0.22	3.5-4.5	2.0-4.0	.28	.28			
	18-41	5-48	25-80	35-60	1.25-1.35	4.00-14.00	0.09-0.15	3.5-5.9	2.0-4.0	.24	.24			
	41-62	5-44	10-70	30-60	1.30-1.50	0.01-0.42	0.08-0.15	3.5-5.9	0.0-1.0	.20	.28			
23B:														
Nicelytown-------	0-6	5-48	51-80	15-27	1.35-1.60	1.40-4.00	0.19-0.22	1.5-2.7	0.5-3.0	.37	.37	5	6	48
	6-18	5-51	29-80	15-27	1.35-1.60	1.40-4.00	0.14-0.22	1.5-2.7	0.5-1.0	.37	.43			
	18-60	5-51	18-70	18-35	1.45-1.70	1.40-4.00	0.10-0.22	3.0-4.0	0.0-0.5	.28	.37			
	60-62	5-51	18-70	18-35	1.45-1.70	1.40-4.00	0.13-0.22	3.0-4.5	0.0-0.5	.17	.37			
23C:														
Nicelytown-------	0-6	5-48	51-80	15-27	1.35-1.60	1.40-4.00	0.19-0.22	1.5-2.7	0.5-3.0	.37	.37	5	6	48
	6-18	5-51	29-80	15-27	1.35-1.60	1.40-4.00	0.14-0.22	1.5-2.7	0.5-1.0	.37	.43			
	18-60	5-51	18-70	18-35	1.45-1.70	1.40-4.00	0.10-0.22	3.0-4.0	0.0-0.5	.28	.37			
	60-62	5-51	18-70	18-35	1.45-1.70	1.40-4.00	0.13-0.22	3.0-4.5	0.0-0.5	.17	.37			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
24B:														
Ogles------------	0-6	25-51	29-49	7-18	1.10-1.40	14.00-42.00	0.13-0.19	0.0-2.9	1.0-3.0	.17	.20	3	5	38
	6-10	25-51	29-49	7-18	1.10-1.40	14.00-42.00	0.07-0.19	0.0-2.9	0.5-1.0	.17	.28			
	10-23	25-82	5-49	5-18	1.10-1.40	14.00-42.00	0.04-0.19	0.0-2.9	0.5-1.0	.17	.28			
	23-65	50-87	5-49	5-18	1.10-1.40	14.00-42.00	0.05-0.13	0.0-2.9	0.5-1.0	.17	.28			
25A:														
Ogles------------	0-6	25-51	29-49	7-18	1.10-1.40	14.00-42.00	0.13-0.19	0.0-2.9	1.0-3.0	.17	.20	3	5	38
	6-10	25-51	29-49	7-18	1.10-1.40	14.00-42.00	0.07-0.19	0.0-2.9	0.5-1.0	.17	.28			
	10-23	25-82	5-49	5-18	1.10-1.40	14.00-42.00	0.04-0.19	0.0-2.9	0.5-1.0	.17	.28			
	23-65	50-87	5-49	5-18	1.10-1.40	14.00-42.00	0.05-0.13	0.0-2.9	0.5-1.0	.17	.28			
Pope-------------	0-8	25-82	5-49	5-15	1.20-1.50	14.00-42.00	0.09-0.16	0.2-1.0	1.0-3.0	.17	.20	5	3	86
	8-45	25-82	5-49	5-18	1.20-1.50	14.00-42.00	0.08-0.19	0.2-1.5	1.0-2.0	.10	.20			
	45-65	25-82	5-49	5-18	1.20-1.50	14.00-42.00	0.02-0.16	0.1-1.0	1.0-2.0	.05	.15			
Philo------------	0-5	15-70	5-49	10-18	1.20-1.40	14.00-42.00	0.16-0.16	0.5-1.5	2.0-4.0	.20	.20	5	3	86
	5-44	15-70	5-49	10-18	1.20-1.40	4.00-14.00	0.13-0.19	0.5-1.5	0.0-0.5	.24	.32			
	44-60	15-70	5-49	10-18	1.20-1.40	14.00-42.00	0.10-0.19	0.5-1.5	0.0-0.5	.10	.20			
26C:														
Oriskany---------	0-6	52-80	5-50	5-20	1.20-1.40	14.00-42.00	0.03-0.11	0.5-1.5	0.5-2.0	.10	.20	3	3	56
	6-14	30-80	5-50	7-27	1.20-1.40	14.00-42.00	0.13-0.19	0.5-2.0	0.5-1.0	.10	.24			
	14-61	20-65	5-50	15-35	1.30-1.65	14.00-42.00	0.13-0.19	1.0-2.9	0.0-0.5	.02	.15			
26D:														
Oriskany---------	0-6	52-80	5-50	5-20	1.20-1.40	14.00-42.00	0.03-0.11	0.5-1.5	0.5-2.0	.10	.20	3	3	56
	6-14	30-80	5-50	7-27	1.20-1.40	14.00-42.00	0.13-0.19	0.5-2.0	0.5-1.0	.10	.24			
	14-61	20-65	5-50	15-35	1.30-1.65	14.00-42.00	0.13-0.19	1.0-2.9	0.0-0.5	.02	.15			
27E:														
Oriskany---------	0-6	52-80	5-50	5-20	1.20-1.40	14.00-42.00	0.03-0.11	0.5-1.5	0.5-2.0	.10	.20	3	3	56
	6-14	30-80	5-50	7-27	1.20-1.40	14.00-42.00	0.13-0.19	0.5-2.0	0.5-1.0	.10	.24			
	14-61	20-65	5-50	15-35	1.30-1.65	14.00-42.00	0.13-0.19	1.0-2.9	0.0-0.5	.02	.15			
28A:														
Philo------------	0-5	15-70	5-49	10-18	1.20-1.40	14.00-42.00	0.16-0.16	0.5-1.5	2.0-4.0	.20	.20	5	3	86
	5-44	15-70	5-49	10-18	1.20-1.40	4.00-14.00	0.13-0.19	0.5-1.5	0.0-0.5	.24	.32			
	44-60	15-70	5-49	10-18	1.20-1.40	14.00-42.00	0.10-0.19	0.5-1.5	0.0-0.5	.10	.20			
29A:														
Pope-------------	0-8	25-82	5-49	5-15	1.20-1.50	14.00-42.00	0.09-0.16	0.2-1.0	1.0-3.0	.17	.20	5	3	86
	8-45	25-82	5-49	5-18	1.20-1.50	14.00-42.00	0.08-0.19	0.2-1.5	1.0-2.0	.10	.20			
	45-65	25-82	5-49	5-18	1.20-1.50	14.00-42.00	0.02-0.16	0.1-1.0	1.0-2.0	.05	.15			
30. Quarries, limestone														

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
31F:														
Rock outcrop.														
Beech Grove------	0-5	5-48	51-80	10-27	1.20-1.50	4.00-14.00	0.15-0.22	0.1-2.9	2.0-5.0	.32	.37	1	5	56
	5-15	---	---	---	---	0.00-4.00	---	---	---	---	---			
Benthole---------	0-3	5-48	51-80	10-27	1.20-1.40	4.00-14.00	0.13-0.18	0.0-2.9	0.5-2.0	.24	.37	3	8	0
	3-37	5-51	29-70	18-35	1.20-1.40	4.00-14.00	0.05-0.13	0.0-2.9	0.0-0.5	.15	.55			
	37-63	5-51	29-70	18-35	1.20-1.40	4.00-14.00	0.05-0.13	0.0-2.9	0.0-0.5	.15	.55			
32C:														
Shelocta---------	0-8	5-45	51-80	10-25	1.15-1.30	4.00-14.00	0.11-0.21	1.0-2.0	0.5-3.0	.32	.43	5	5	56
	8-15	5-50	29-80	10-25	1.15-1.30	4.00-14.00	0.10-0.21	1.0-2.5	0.0-0.5	.37	.43			
	15-46	1-30	29-58	18-34	1.30-1.55	4.00-14.00	0.08-0.20	1.5-2.9	0.0-0.5	.37	.43			
	46-62	1-30	29-58	18-34	1.30-1.55	4.00-42.00	0.09-0.20	1.5-2.9	0.0-0.5	.20	.32			
32D:														
Shelocta---------	0-8	5-45	51-80	10-25	1.15-1.30	4.00-14.00	0.11-0.21	1.0-2.0	0.5-3.0	.32	.43	5	5	56
	8-15	5-50	29-80	10-25	1.15-1.30	4.00-14.00	0.10-0.21	1.0-2.5	0.0-0.5	.37	.43			
	15-46	1-30	29-58	18-34	1.30-1.55	4.00-14.00	0.08-0.20	1.5-2.9	0.0-0.5	.37	.43			
	46-62	1-30	29-58	18-34	1.30-1.55	4.00-42.00	0.09-0.20	1.5-2.9	0.0-0.5	.20	.32			
33B:														
Slabtown---------	0-18	5-48	45-80	10-27	1.25-1.50	4.00-14.00	0.11-0.21	1.0-2.5	1.0-3.0	.28	.37	4	5	56
	18-44	5-51	18-80	20-35	1.30-1.60	4.00-14.00	0.07-0.21	3.5-5.0	0.2-0.5	.32	.43			
	44-75	5-44	15-70	35-60	1.25-1.55	1.40-4.00	0.11-0.15	6.5-8.0	0.0-0.2	.20	.20			
33C:														
Slabtown---------	0-18	5-48	45-80	10-27	1.25-1.50	4.00-14.00	0.11-0.21	1.0-2.5	1.0-3.0	.28	.37	4	5	56
	18-44	5-51	18-80	20-35	1.30-1.60	4.00-14.00	0.07-0.21	3.5-5.0	0.2-0.5	.32	.43			
	44-75	5-44	15-70	35-60	1.25-1.55	1.40-4.00	0.11-0.15	6.5-8.0	0.0-0.2	.20	.20			
34B:														
Tumbling---------	0-9	25-51	29-49	10-27	1.20-1.40	4.00-14.00	0.19-0.19	1.0-2.0	0.5-2.0	.24	.28	5	5	56
	9-44	12-46	15-70	27-50	1.20-1.45	4.00-14.00	0.12-0.13	3.0-5.0	0.0-1.0	.24	.28			
	44-62	12-46	15-70	30-55	1.20-1.40	4.00-14.00	0.12-0.13	3.0-5.5	0.0-0.5	.17	.24			
34C:														
Tumbling---------	0-9	25-51	29-49	10-27	1.20-1.40	4.00-14.00	0.19-0.19	1.0-2.0	0.5-2.0	.24	.28	5	5	56
	9-44	12-46	15-70	27-50	1.20-1.45	4.00-14.00	0.12-0.13	3.0-5.0	0.0-1.0	.24	.28			
	44-62	12-46	15-70	30-55	1.20-1.40	4.00-14.00	0.12-0.13	3.0-5.5	0.0-0.5	.17	.24			
34D:														
Tumbling---------	0-9	25-51	29-49	10-27	1.20-1.40	4.00-14.00	0.19-0.19	1.0-2.0	0.5-2.0	.24	.28	5	5	56
	9-44	12-46	15-70	27-50	1.20-1.45	4.00-14.00	0.12-0.13	3.0-5.0	0.0-1.0	.24	.28			
	44-62	12-46	15-70	30-55	1.20-1.40	4.00-14.00	0.12-0.13	3.0-5.5	0.0-0.5	.17	.24			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
35C:														
Tumbling---------	0-9	25-51	29-49	10-27	1.20-1.40	4.00-14.00	0.19-0.19	1.0-2.0	0.5-2.0	.24	.28	5	5	56
	9-44	12-46	15-70	27-50	1.20-1.45	4.00-14.00	0.12-0.13	3.0-5.0	0.0-1.0	.24	.28			
	44-62	12-46	15-70	30-55	1.20-1.40	4.00-14.00	0.12-0.13	3.0-5.5	0.0-0.5	.17	.24			
35D:														
Tumbling---------	0-9	25-51	29-49	10-27	1.20-1.40	4.00-14.00	0.19-0.19	1.0-2.0	0.5-2.0	.24	.28	5	5	56
	9-44	12-46	15-70	27-50	1.20-1.45	4.00-14.00	0.12-0.13	3.0-5.0	0.0-1.0	.24	.28			
	44-62	12-46	15-70	30-55	1.20-1.40	4.00-14.00	0.12-0.13	3.0-5.5	0.0-0.5	.17	.24			
36C:														
Tumbling---------	0-9	25-51	29-49	10-27	1.20-1.40	4.00-14.00	0.19-0.19	1.0-2.0	0.5-2.0	.24	.28	5	5	56
	9-44	12-46	15-70	27-50	1.20-1.45	4.00-14.00	0.12-0.13	3.0-5.0	0.0-1.0	.24	.28			
	44-62	12-46	15-70	30-55	1.20-1.40	4.00-14.00	0.12-0.13	3.0-5.5	0.0-0.5	.17	.24			
36D:														
Tumbling---------	0-9	25-51	29-49	10-27	1.20-1.40	4.00-14.00	0.19-0.19	1.0-2.0	0.5-2.0	.24	.28	5	5	56
	9-44	12-46	15-70	27-50	1.20-1.45	4.00-14.00	0.12-0.13	3.0-5.0	0.0-1.0	.24	.28			
	44-62	12-46	15-70	30-55	1.20-1.40	4.00-14.00	0.12-0.13	3.0-5.5	0.0-0.5	.17	.24			
37. Udorthents-Urban land														
38C:														
Watahala---------	0-2	2-48	51-80	18-27	1.25-1.45	14.00-42.00	0.09-0.18	1.5-2.5	0.5-2.5	.20	.37	4	5	48
	2-17	2-51	29-80	15-27	1.20-1.50	14.00-42.00	0.09-0.18	1.0-2.5	0.0-0.5	.28	.49			
	17-29	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.07-0.15	3.5-4.5	0.0-0.5	.15	.32			
	29-62	2-44	2-58	40-75	1.20-1.40	1.40-14.00	0.06-0.14	3.5-5.9	0.0-0.5	.15	.17			
38D:														
Watahala---------	0-2	2-48	51-80	18-27	1.25-1.45	14.00-42.00	0.09-0.18	1.5-2.5	0.5-2.5	.20	.37	4	5	48
	2-17	2-51	29-80	15-27	1.20-1.50	14.00-42.00	0.09-0.18	1.0-2.5	0.0-0.5	.28	.49			
	17-29	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.07-0.15	3.5-4.5	0.0-0.5	.15	.32			
	29-62	2-44	2-58	40-75	1.20-1.40	1.40-14.00	0.06-0.14	3.5-5.9	0.0-0.5	.15	.17			
38E:														
Watahala---------	0-2	2-48	51-80	18-27	1.25-1.45	14.00-42.00	0.09-0.18	1.5-2.5	0.5-2.5	.20	.37	4	5	48
	2-17	2-51	29-80	15-27	1.20-1.50	14.00-42.00	0.09-0.18	1.0-2.5	0.0-0.5	.28	.49			
	17-29	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.07-0.15	3.5-4.5	0.0-0.5	.15	.32			
	29-62	2-44	2-58	40-75	1.20-1.40	1.40-14.00	0.06-0.14	3.5-5.9	0.0-0.5	.15	.17			
38F:														
Watahala---------	0-2	2-48	51-80	18-27	1.25-1.45	14.00-42.00	0.09-0.18	1.5-2.5	0.5-2.5	.20	.37	4	5	48
	2-17	2-51	29-80	15-27	1.20-1.50	14.00-42.00	0.09-0.18	1.0-2.5	0.0-0.5	.28	.49			
	17-29	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.07-0.15	3.5-4.5	0.0-0.5	.15	.32			
	29-62	2-44	2-58	40-75	1.20-1.40	1.40-14.00	0.06-0.14	3.5-5.9	0.0-0.5	.15	.17			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
39C:														
Watahala----------	0-2	2-48	51-80	18-27	1.25-1.45	14.00-42.00	0.09-0.18	1.5-2.5	0.5-2.5	.20	.37	4	5	48
	2-17	2-51	29-80	15-27	1.20-1.50	14.00-42.00	0.09-0.18	1.0-2.5	0.0-0.5	.28	.49			
	17-29	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.07-0.15	3.5-4.5	0.0-0.5	.15	.32			
	29-62	2-44	2-58	40-75	1.20-1.40	1.40-14.00	0.06-0.14	3.5-5.9	0.0-0.5	.15	.17			
39D:														
Watahala----------	0-2	2-48	51-80	18-27	1.25-1.45	14.00-42.00	0.09-0.18	1.5-2.5	0.5-2.5	.20	.37	4	5	48
	2-17	2-51	29-80	15-27	1.20-1.50	14.00-42.00	0.09-0.18	1.0-2.5	0.0-0.5	.28	.49			
	17-29	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.07-0.15	3.5-4.5	0.0-0.5	.15	.32			
	29-62	2-44	2-58	40-75	1.20-1.40	1.40-14.00	0.06-0.14	3.5-5.9	0.0-0.5	.15	.17			
39E:														
Watahala----------	0-2	2-48	51-80	18-27	1.25-1.45	14.00-42.00	0.09-0.18	1.5-2.5	0.5-2.5	.20	.37	4	5	48
	2-17	2-51	29-80	15-27	1.20-1.50	14.00-42.00	0.09-0.18	1.0-2.5	0.0-0.5	.28	.49			
	17-29	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.07-0.15	3.5-4.5	0.0-0.5	.15	.32			
	29-62	2-44	2-58	40-75	1.20-1.40	1.40-14.00	0.06-0.14	3.5-5.9	0.0-0.5	.15	.17			
40F:														
Weikert-----------	0-3	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.08-0.18	0.5-1.5	0.5-2.0	.28	.49	1	5	48
	3-6	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.08-0.19	0.5-2.0	0.0-0.5	.20	.49			
	6-11	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.06-0.12	0.5-2.5	0.0-0.5	.10	.49			
	11-17	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.03-0.09	0.5-2.5	0.0-0.5	.05	.43			
	17-27	---	---	---	---	1.40-42.00	---	---	---	---	---			
Rough-------------	0-3	15-35	50-70	10-25	1.20-1.50	4.00-42.00	0.08-0.17	0.5-1.5	0.5-2.0	.32	.55	1	5	56
	3-6	10-35	35-70	10-27	1.20-1.60	4.00-42.00	0.06-0.14	0.5-2.7	0.0-0.5	.20	.55			
	6-8	10-45	35-70	10-25	1.20-1.60	14.00-42.00	0.03-0.10	0.5-2.9	0.0-0.5	.05	.55			
	8-18	---	---	---	---	0.01-4.00	---	---	---	---	---			
Rock outcrop.														
41D:														
Westmoreland------	0-8	5-48	51-80	15-27	1.20-1.40	4.00-14.00	0.14-0.21	1.0-2.0	1.0-4.0	.24	.32	3	5	56
	8-16	5-48	42-80	18-27	1.20-1.40	4.00-14.00	0.12-0.21	1.0-2.0	0.0-0.5	.32	.43			
	16-39	5-48	42-80	18-35	1.20-1.50	4.00-14.00	0.09-0.18	1.0-2.9	0.0-0.5	.28	.37			
	39-47	5-48	42-80	18-27	1.20-1.50	4.00-14.00	0.02-0.17	1.0-2.5	0.0-0.5	.02	.24			
	47-57	---	---	---	---	1.40-42.00	---	---	---	---	---			
Culleoka----------	0-3	5-48	51-80	15-27	1.20-1.40	4.00-42.00	0.11-0.22	1.0-2.0	1.0-4.0	.24	.37	2	5	56
	3-11	5-51	29-80	18-35	1.20-1.50	14.00-42.00	0.09-0.19	1.5-2.5	0.0-0.5	.37	.49			
	11-22	5-51	29-80	18-35	1.20-1.50	4.00-42.00	0.09-0.19	1.5-2.9	0.0-0.5	.24	.43			
	22-27	5-51	29-80	18-35	1.20-1.50	4.00-42.00	0.04-0.17	1.0-2.9	0.0-0.5	.10	.43			
	27-37	---	---	---	---	1.40-42.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
41E:														
Westmoreland-----	0-8	5-48	51-80	15-27	1.20-1.40	4.00-14.00	0.14-0.21	1.0-2.0	1.0-4.0	.24	.32	3	5	56
	8-16	5-48	42-80	18-27	1.20-1.40	4.00-14.00	0.12-0.21	1.0-2.0	0.0-0.5	.32	.43			
	16-39	5-48	42-80	18-35	1.20-1.50	4.00-14.00	0.09-0.18	1.0-2.9	0.0-0.5	.28	.37			
	39-47	5-48	42-80	18-27	1.20-1.50	4.00-14.00	0.02-0.17	1.0-2.5	0.0-0.5	.02	.24			
	47-57	---	---	---	---	1.40-42.00	---	---	---	---	---			
Culleoka---------	0-3	5-48	51-80	15-27	1.20-1.40	4.00-42.00	0.11-0.22	1.0-2.0	1.0-4.0	.24	.37	2	5	56
	3-11	5-51	29-80	18-35	1.20-1.50	14.00-42.00	0.09-0.19	1.5-2.5	0.0-0.5	.37	.49			
	11-22	5-51	29-80	18-35	1.20-1.50	4.00-42.00	0.09-0.19	1.5-2.9	0.0-0.5	.24	.43			
	22-27	5-51	29-80	18-35	1.20-1.50	4.00-42.00	0.04-0.17	1.0-2.9	0.0-0.5	.10	.43			
	27-37	---	---	---	---	1.40-42.00	---	---	---	---	---			
W.														
Water														

Table 17.—Chemical Soil Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
1B:				
Alonzville-----------	0-6	4.9-14	3.7-10	5.1-6.0
	6-11	4.5-7.9	3.4-5.9	5.1-6.0
	11-37	4.5-9.6	3.4-7.2	5.1-6.0
	37-62	2.5-9.6	1.9-7.2	5.1-6.0
2A:				
Atkins---------------	0-9	4.8-16	3.6-12	4.5-5.5
	9-37	5.6-13	4.2-9.9	4.5-5.5
	37-62	3.6-11	2.7-8.2	4.5-6.0
3D:				
Bailegap-------------	0-4	3.6-11	2.7-8.0	4.5-5.5
	4-9	2.5-7.4	1.9-5.5	4.5-5.5
	9-28	4.5-9.9	3.4-7.4	4.5-5.5
	28-43	4.5-8.6	3.4-6.5	4.5-5.5
	43-46	---	---	---
	46-56	---	---	---
4E:				
Bailegap-------------	0-4	3.6-11	2.7-8.0	4.5-5.5
	4-9	2.5-7.4	1.9-5.5	4.5-5.5
	9-28	4.5-9.9	3.4-7.4	4.5-5.5
	28-43	4.5-8.6	3.4-6.5	4.5-5.5
	43-46	---	---	---
	46-56	---	---	---
Lily-----------------	0-7	2.4-9.5	1.8-7.1	3.5-5.5
	7-13	1.2-8.5	0.9-6.4	3.5-5.5
	13-24	4.5-9.9	3.4-7.4	3.5-5.5
	24-30	2.5-9.9	1.9-7.4	3.5-5.5
	30-40	---	---	---
Dekalb---------------	0-5	3.6-9.5	2.7-7.1	3.5-6.0
	5-24	1.8-5.6	1.3-4.2	3.5-6.0
	24-31	1.2-4.9	0.9-3.7	3.5-6.0
	31-41	---	---	---
5C:				
Berks----------------	0-5	2.4-10	1.8-7.7	4.5-5.5
	5-15	1.2-6.9	0.9-5.2	3.5-5.5
	15-26	3.8-7.9	2.8-5.9	3.5-5.5
	26-28	2.5-6.1	1.9-4.6	3.5-5.5
	28-38	---	---	---
Weikert--------------	0-3	4.9-11	3.7-8.4	4.5-5.5
	3-6	3.8-7.9	2.8-5.9	3.5-5.5
	6-11	3.8-7.9	2.8-5.9	3.5-5.5
	11-17	3.8-7.9	2.8-5.9	3.5-5.5
	17-27	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
5D:				
Berks	0-5	2.4-10	1.8-7.7	4.5-5.5
	5-15	1.2-6.9	0.9-5.2	3.5-5.5
	15-26	3.8-7.9	2.8-5.9	3.5-5.5
	26-28	2.5-6.1	1.9-4.6	3.5-5.5
	28-38	---	---	---
Weikert	0-3	4.9-11	3.7-8.4	4.5-5.5
	3-6	3.8-7.9	2.8-5.9	3.5-5.5
	6-11	3.8-7.9	2.8-5.9	3.5-5.5
	11-17	3.8-7.9	2.8-5.9	3.5-5.5
	17-27	---	---	---
5E:				
Berks	0-5	2.4-10	1.8-7.7	4.5-5.5
	5-15	1.2-6.9	0.9-5.2	3.5-5.5
	15-26	3.8-7.9	2.8-5.9	3.5-5.5
	26-28	2.5-6.1	1.9-4.6	3.5-5.5
	28-38	---	---	---
Weikert	0-3	4.9-11	3.7-8.4	4.5-5.5
	3-6	3.8-7.9	2.8-5.9	3.5-5.5
	6-11	3.8-7.9	2.8-5.9	3.5-5.5
	11-17	3.8-7.9	2.8-5.9	3.5-5.5
	17-27	---	---	---
6D:				
Bland	0-4	9.0-16	6.8-12	5.1-7.3
	4-7	3.8-14	2.8-10	5.1-7.3
	7-30	10-16	7.5-12	5.1-7.3
	30-36	7.5-14	5.6-10	5.1-7.3
	36-46	---	---	---
6E:				
Bland	0-4	9.0-16	6.8-12	5.1-7.3
	4-7	3.8-14	2.8-10	5.1-7.3
	7-30	10-16	7.5-12	5.1-7.3
	30-36	7.5-14	5.6-10	5.1-7.3
	36-46	---	---	---
7D:				
Brushy	0-7	3.6-9.5	2.7-7.1	3.5-6.0
	7-13	2.5-8.5	1.9-6.4	3.5-6.0
	13-34	4.8-9.6	3.6-7.2	3.5-6.0
	34-44	---	---	---
7E:				
Brushy	0-7	3.6-9.5	2.7-7.1	3.5-6.0
	7-13	2.5-8.5	1.9-6.4	3.5-6.0
	13-34	4.8-9.6	3.6-7.2	3.5-6.0
	34-44	---	---	---
8D:				
Calvin	0-4	2.5-8.5	1.9-6.4	4.5-6.0
	4-9	2.5-7.4	1.9-5.5	4.5-6.0
	9-21	3.8-7.9	2.8-5.9	4.5-6.0
	21-27	3.8-7.9	2.8-5.9	4.5-6.0
	27-37	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
8E:				
Calvin----------------	0-4	2.5-8.5	1.9-6.4	4.5-6.0
	4-9	2.5-7.4	1.9-5.5	4.5-6.0
	9-21	3.8-7.9	2.8-5.9	4.5-6.0
	21-27	3.8-7.9	2.8-5.9	4.5-6.0
	27-37	---	---	---
9D:				
Calvin----------------	0-4	2.5-8.5	1.9-6.4	4.5-6.0
	4-9	2.5-7.4	1.9-5.5	4.5-6.0
	9-21	3.8-7.9	2.8-5.9	4.5-6.0
	21-27	3.8-7.9	2.8-5.9	4.5-6.0
	27-37	---	---	---
10E:				
Calvin----------------	0-4	2.5-8.5	1.9-6.4	4.5-6.0
	4-9	2.5-7.4	1.9-5.5	4.5-6.0
	9-21	3.8-7.9	2.8-5.9	4.5-6.0
	21-27	3.8-7.9	2.8-5.9	4.5-6.0
	27-37	---	---	---
Rough-----------------	0-3	3.6-11	2.7-8.1	3.6-5.5
	3-6	2.5-7.9	1.9-5.9	3.6-5.5
	6-8	2.5-7.4	1.9-5.5	3.6-5.5
	8-18	---	---	---
11D:				
Carbo-----------------	0-5	7.9-16	5.9-12	6.1-7.8
	5-24	15-21	11-16	6.1-7.8
	24-34	---	---	---
Rock outcrop.				
11E:				
Carbo-----------------	0-5	7.9-16	5.9-12	6.1-7.8
	5-24	15-21	11-16	6.1-7.8
	24-34	---	---	---
Rock outcrop.				
12D:				
Carbo-----------------	0-5	7.9-16	5.9-12	6.1-7.8
	5-24	15-21	11-16	6.1-7.8
	24-34	---	---	---
Rock outcrop.				
13F:				
Culleoka--------------	0-3	6.0-11	4.5-8.4	5.1-6.0
	3-11	4.5-9.9	3.4-7.4	5.1-6.0
	11-22	4.5-9.9	3.4-7.4	5.1-6.0
	22-27	4.5-9.9	3.4-7.4	5.1-6.5
	27-37	---	---	---
Berks-----------------	0-5	2.4-10	1.8-7.7	4.5-5.5
	5-15	1.2-6.9	0.9-5.2	3.5-5.5
	15-26	3.8-7.9	2.8-5.9	3.5-5.5
	26-28	2.5-6.1	1.9-4.6	3.5-5.5
	28-38	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
14D:				
Dekalb---------------	0-5	3.6-9.5	2.7-7.1	3.5-6.0
	5-24	1.8-5.6	1.3-4.2	3.5-6.0
	24-31	1.2-4.9	0.9-3.7	3.5-6.0
	31-41	---	---	---
14E:				
Dekalb---------------	0-5	3.6-9.5	2.7-7.1	3.5-6.0
	5-24	1.8-5.6	1.3-4.2	3.5-6.0
	24-31	1.2-4.9	0.9-3.7	3.5-6.0
	31-41	---	---	---
15D:				
Dekalb---------------	0-5	3.6-9.5	2.7-7.1	3.5-6.0
	5-24	1.8-5.6	1.3-4.2	3.5-6.0
	24-31	1.2-4.9	0.9-3.7	3.5-6.0
	31-41	---	---	---
Rock outcrop.				
15F:				
Dekalb---------------	0-5	3.6-9.5	2.7-7.1	3.5-6.0
	5-24	1.8-5.6	1.3-4.2	3.5-6.0
	24-31	1.2-4.9	0.9-3.7	3.5-6.0
	31-41	---	---	---
Rock outcrop.				
16C:				
Frederick------------	0-8	4.9-12	3.7-9.3	4.5-6.0
	8-51	6.8-16	5.1-12	4.5-6.0
	51-72	10-20	7.5-15	4.5-6.0
16D:				
Frederick------------	0-8	4.9-12	3.7-9.3	4.5-6.0
	8-51	6.8-16	5.1-12	4.5-6.0
	51-72	10-20	7.5-15	4.5-6.0
17C:				
Frederick------------	0-5	2.9-12	2.2-9.3	4.5-6.0
	5-13	2.9-11	2.2-8.4	4.5-6.0
	13-27	8.8-17	6.6-13	4.5-6.0
	27-62	10-20	7.5-15	4.5-6.0
17D:				
Frederick------------	0-5	2.9-12	2.2-9.3	4.5-6.0
	5-13	2.9-11	2.2-8.4	4.5-6.0
	13-27	8.8-17	6.6-13	4.5-6.0
	27-62	10-20	7.5-15	4.5-6.0
17E:				
Frederick------------	0-5	2.9-12	2.2-9.3	4.5-6.0
	5-13	2.9-11	2.2-8.4	4.5-6.0
	13-27	8.8-17	6.6-13	4.5-6.0
	27-62	10-20	7.5-15	4.5-6.0

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
18C:				
Frederick	0-5	2.9-12	2.2-9.3	4.5-6.0
	5-13	2.9-11	2.2-8.4	4.5-6.0
	13-27	8.8-17	6.6-13	4.5-6.0
	27-62	10-20	7.5-15	4.5-6.0
Watahala	0-2	5.6-12	4.2-9.3	3.6-5.5
	2-17	3.8-7.9	2.8-5.9	3.6-5.5
	17-29	4.5-9.9	3.4-7.4	3.6-5.5
	29-62	10-20	7.5-15	4.5-5.5
18D:				
Frederick	0-5	2.9-12	2.2-9.3	4.5-6.0
	5-13	2.9-11	2.2-8.4	4.5-6.0
	13-27	8.8-17	6.6-13	4.5-6.0
	27-62	10-20	7.5-15	4.5-6.0
Watahala	0-2	5.6-12	4.2-9.3	3.6-5.5
	2-17	3.8-7.9	2.8-5.9	3.6-5.5
	17-29	4.5-9.9	3.4-7.4	3.6-5.5
	29-62	10-20	7.5-15	4.5-5.5
19C:				
Gilpin	0-5	4.9-12	3.7-9.3	3.5-5.5
	5-9	3.8-9.0	2.8-6.8	3.5-5.5
	9-26	4.5-9.9	3.4-7.4	3.5-5.5
	26-33	3.8-9.9	2.8-7.4	3.5-5.5
	33-43	---	---	---
19D:				
Gilpin	0-5	4.9-12	3.7-9.3	3.5-5.5
	5-9	3.8-9.0	2.8-6.8	3.5-5.5
	9-26	4.5-9.9	3.4-7.4	3.5-5.5
	26-33	3.8-9.9	2.8-7.4	3.5-5.5
	33-43	---	---	---
20C:				
Jefferson	0-5	3.6-11	2.7-8.1	4.5-5.5
	5-12	3.6-8.5	2.7-7.2	4.5-5.5
	12-32	4.5-9.6	3.4-7.2	4.5-5.5
	32-61	4.5-9.6	3.4-7.2	4.5-5.5
	61-70	3.8-7.9	2.8-5.9	4.5-5.5
20D:				
Jefferson	0-5	3.6-11	2.7-8.1	4.5-5.5
	5-12	3.6-8.5	2.7-7.2	4.5-5.5
	12-32	4.5-9.6	3.4-7.2	4.5-5.5
	32-61	4.5-9.6	3.4-7.2	4.5-5.5
	61-70	3.8-7.9	2.8-5.9	4.5-5.5
21C:				
Lily	0-7	2.4-9.5	1.8-7.1	3.5-5.5
	7-13	1.2-8.5	0.9-6.4	3.5-5.5
	13-24	4.5-9.9	3.4-7.4	3.5-5.5
	24-30	2.5-9.9	1.9-7.4	3.5-5.5
	30-40	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
21D:				
Lily-----------------	0-7	2.4-9.5	1.8-7.1	3.5-5.5
	7-13	1.2-8.5	0.9-6.4	3.5-5.5
	13-24	4.5-9.9	3.4-7.4	3.5-5.5
	24-30	2.5-9.9	1.9-7.4	3.5-5.5
	30-40	---	---	---
21E:				
Lily-----------------	0-7	2.4-9.5	1.8-7.1	3.5-5.5
	7-13	1.2-8.5	0.9-6.4	3.5-5.5
	13-24	4.5-9.9	3.4-7.4	3.5-5.5
	24-30	2.5-9.9	1.9-7.4	3.5-5.5
	30-40	---	---	---
22A:				
Maurertown-----------	0-6	9.0-16	6.8-12	5.6-7.3
	6-18	9.0-19	6.8-14	5.6-7.3
	18-41	13-24	9.9-18	5.6-7.3
	41-62	7.5-17	5.6-13	5.6-7.3
23B:				
Nicelytown-----------	0-6	4.9-14	3.7-10	4.5-5.8
	6-18	4.9-9.0	3.7-6.8	4.5-5.5
	18-60	4.5-9.9	3.4-7.4	4.5-5.5
	60-62	4.5-9.9	3.4-7.4	4.5-5.5
23C:				
Nicelytown-----------	0-6	4.9-14	3.7-10	4.5-5.8
	6-18	4.9-9.0	3.7-6.8	4.5-5.5
	18-60	4.5-9.9	3.4-7.4	4.5-5.5
	60-62	4.5-9.9	3.4-7.4	4.5-5.5
24B:				
Ogles----------------	0-6	4.0-11	3.0-8.0	4.5-6.0
	6-10	3.0-7.0	2.0-5.0	4.5-6.0
	10-23	2.0-7.0	2.0-5.0	4.5-6.0
	23-65	2.0-7.0	2.0-5.0	4.5-6.0
25A:				
Ogles----------------	0-6	4.0-11	3.0-8.0	4.5-6.0
	6-10	3.0-7.0	2.0-5.0	4.5-6.0
	10-23	2.0-7.0	2.0-5.0	4.5-6.0
	23-65	2.0-7.0	2.0-5.0	4.5-6.0
Pope-----------------	0-8	3.5-10	2.6-7.9	3.5-5.8
	8-45	3.5-9.0	2.6-6.8	3.5-5.5
	45-65	3.5-9.0	2.6-6.8	3.5-5.5
Philo----------------	0-5	7.0-14	5.2-10	4.5-6.0
	5-44	2.5-5.6	1.9-4.2	4.5-6.0
	44-60	2.5-5.6	1.9-4.2	4.5-6.0
26C:				
Oriskany-------------	0-6	2.4-9.5	1.8-7.1	4.5-5.5
	6-14	2.9-9.0	2.2-6.8	4.5-5.5
	14-61	3.8-9.9	2.8-7.4	4.5-5.5

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
26D:				
Oriskany-------------	0-6	2.4-9.5	1.8-7.1	4.5-5.5
	6-14	2.9-9.0	2.2-6.8	4.5-5.5
	14-61	3.8-9.9	2.8-7.4	4.5-5.5
27E:				
Oriskany-------------	0-6	2.4-9.5	1.8-7.1	4.5-5.5
	6-14	2.9-9.0	2.2-6.8	4.5-5.5
	14-61	3.8-9.9	2.8-7.4	4.5-5.5
28A:				
Philo----------------	0-5	7.0-14	5.2-10	4.5-6.0
	5-44	2.5-5.6	1.9-4.2	4.5-6.0
	44-60	2.5-5.6	1.9-4.2	4.5-6.0
29A:				
Pope-----------------	0-8	3.5-10	2.6-7.9	3.5-5.8
	8-45	3.5-9.0	2.6-6.8	3.5-5.5
	45-65	3.5-9.0	2.6-6.8	3.5-5.5
30.				
Quarries, limestone				
31F:				
Rock outcrop.				
Beech Grove----------	0-5	7.0-18	5.2-14	6.1-8.4
	5-15	---	---	---
Benthole-------------	0-3	6.1-18	4.6-14	6.6-8.4
	3-37	9.0-19	6.8-14	6.6-8.4
	37-63	9.0-19	6.8-14	6.6-8.4
32C:				
Shelocta-------------	0-8	3.6-13	2.7-9.8	4.5-5.5
	8-15	2.5-7.4	1.9-5.5	4.5-5.5
	15-46	4.5-9.6	3.4-7.2	4.5-5.5
	46-62	4.5-9.6	3.4-7.2	4.5-5.5
32D:				
Shelocta-------------	0-8	3.6-13	2.7-9.8	4.5-5.5
	8-15	2.5-7.4	1.9-5.5	4.5-5.5
	15-46	4.5-9.6	3.4-7.2	4.5-5.5
	46-62	4.5-9.6	3.4-7.2	4.5-5.5
33B:				
Slabtown-------------	0-18	4.8-14	3.6-10	5.6-7.8
	18-44	5.6-9.9	4.2-7.4	6.1-7.8
	44-75	8.8-16	6.6-12	6.1-7.8
33C:				
Slabtown-------------	0-18	4.8-14	3.6-10	5.6-7.8
	18-44	5.6-9.9	4.2-7.4	6.1-7.8
	44-75	8.8-16	6.6-12	6.1-7.8
34B:				
Tumbling-------------	0-9	3.6-11	2.7-8.4	4.5-6.0
	9-44	6.8-15	5.1-11	4.5-5.5
	44-62	7.5-15	5.6-11	4.5-5.5

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
34C:				
Tumbling	0-9	3.6-11	2.7-8.4	4.5-6.0
	9-44	6.8-15	5.1-11	4.5-5.5
	44-62	7.5-15	5.6-11	4.5-5.5
34D:				
Tumbling	0-9	3.6-11	2.7-8.4	4.5-6.0
	9-44	6.8-15	5.1-11	4.5-5.5
	44-62	7.5-15	5.6-11	4.5-5.5
35C:				
Tumbling	0-9	3.6-11	2.7-8.4	4.5-6.0
	9-44	6.8-15	5.1-11	4.5-5.5
	44-62	7.5-15	5.6-11	4.5-5.5
35D:				
Tumbling	0-9	3.6-11	2.7-8.4	4.5-6.0
	9-44	6.8-15	5.1-11	4.5-5.5
	44-62	7.5-15	5.6-11	4.5-5.5
36C:				
Tumbling	0-9	3.6-11	2.7-8.4	4.5-6.0
	9-44	6.8-15	5.1-11	4.5-5.5
	44-62	7.5-15	5.6-11	4.5-5.5
36D:				
Tumbling	0-9	3.6-11	2.7-8.4	4.5-6.0
	9-44	6.8-15	5.1-11	4.5-5.5
	44-62	7.5-15	5.6-11	4.5-5.5
37.				
Udorthents-Urban land				
38C:				
Watahala	0-2	5.6-12	4.2-9.3	3.6-5.5
	2-17	3.8-7.9	2.8-5.9	3.6-5.5
	17-29	4.5-9.9	3.4-7.4	3.6-5.5
	29-62	10-20	7.5-15	4.5-5.5
38D:				
Watahala	0-2	5.6-12	4.2-9.3	3.6-5.5
	2-17	3.8-7.9	2.8-5.9	3.6-5.5
	17-29	4.5-9.9	3.4-7.4	3.6-5.5
	29-62	10-20	7.5-15	4.5-5.5
38E:				
Watahala	0-2	5.6-12	4.2-9.3	3.6-5.5
	2-17	3.8-7.9	2.8-5.9	3.6-5.5
	17-29	4.5-9.9	3.4-7.4	3.6-5.5
	29-62	10-20	7.5-15	4.5-5.5
38F:				
Watahala	0-2	5.6-12	4.2-9.3	3.6-5.5
	2-17	3.8-7.9	2.8-5.9	3.6-5.5
	17-29	4.5-9.9	3.4-7.4	3.6-5.5
	29-62	10-20	7.5-15	4.5-5.5

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
39C:				
Watahala-------------	0-2	5.6-12	4.2-9.3	3.6-5.5
	2-17	3.8-7.9	2.8-5.9	3.6-5.5
	17-29	4.5-9.9	3.4-7.4	3.6-5.5
	29-62	10-20	7.5-15	4.5-5.5
39D:				
Watahala-------------	0-2	5.6-12	4.2-9.3	3.6-5.5
	2-17	3.8-7.9	2.8-5.9	3.6-5.5
	17-29	4.5-9.9	3.4-7.4	3.6-5.5
	29-62	10-20	7.5-15	4.5-5.5
39E:				
Watahala-------------	0-2	5.6-12	4.2-9.3	3.6-5.5
	2-17	3.8-7.9	2.8-5.9	3.6-5.5
	17-29	4.5-9.9	3.4-7.4	3.6-5.5
	29-62	10-20	7.5-15	4.5-5.5
40F:				
Weikert--------------	0-3	4.9-11	3.7-8.4	4.5-5.5
	3-6	3.8-7.9	2.8-5.9	3.5-5.5
	6-11	3.8-7.9	2.8-5.9	3.5-5.5
	11-17	3.8-7.9	2.8-5.9	3.5-5.5
	17-27	---	---	---
Rough----------------	0-3	3.6-11	2.7-8.1	3.6-5.5
	3-6	2.5-7.9	1.9-5.9	3.6-5.5
	6-8	2.5-7.4	1.9-5.5	3.6-5.5
	8-18	---	---	---
Rock outcrop.				
41D:				
Westmoreland---------	0-8	6.0-16	4.5-12	4.5-6.0
	8-16	4.5-7.9	3.4-7.0	4.5-6.0
	16-39	4.5-9.9	3.4-7.4	5.1-6.0
	39-47	4.5-7.9	3.4-5.9	5.1-6.0
	47-57	---	---	---
Culleoka-------------	0-3	6.0-11	4.5-8.4	5.1-6.0
	3-11	4.5-9.9	3.4-7.4	5.1-6.0
	11-22	4.5-9.9	3.4-7.4	5.1-6.0
	22-27	4.5-9.9	3.4-7.4	5.1-6.5
	27-37	---	---	---
41E:				
Westmoreland---------	0-8	6.0-16	4.5-12	4.5-6.0
	8-16	4.5-7.9	3.4-7.0	4.5-6.0
	16-39	4.5-9.9	3.4-7.4	5.1-6.0
	39-47	4.5-7.9	3.4-5.9	5.1-6.0
	47-57	---	---	---
Culleoka-------------	0-3	6.0-11	4.5-8.4	5.1-6.0
	3-11	4.5-9.9	3.4-7.4	5.1-6.0
	11-22	4.5-9.9	3.4-7.4	5.1-6.0
	22-27	4.5-9.9	3.4-7.4	5.1-6.5
	27-37	---	---	---
W.				
Water				

Table 18.—Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
1B:										
Alonzville	B	Negligible	Jan-April	---	---	0.5-1.0	Very brief	Occasional	Very brief	Rare
			May	---	---	0.3-1.0	Very brief	Rare	Very brief	Rare
			June-Sept	---	---	---	---	None	Very brief	Rare
			October	---	---	0.3-1.0	Very brief	Rare	Very brief	Rare
			Nov-Dec	---	---	0.5-1.0	Very brief	Occasional	Very brief	Rare
2A:										
Atkins	D	Negligible								
			Jan-April	0.0-1.0	>6.0	0.5-1.0	Brief	Frequent	Very brief	Frequent
			May	0.0-1.0	>6.0	0.3-1.0	Brief	Frequent	Very brief	Frequent
			June	1.0-6.6	>6.0	0.2-0.7	Very brief	Occasional	Very brief	Occasional
			Jul-Sept	1.0-6.6	>6.0	0.1-0.5	Very brief	Occasional	Very brief	Occasional
			October	1.0-6.6	>6.0	0.2-0.7	Very brief	Occasional	Very brief	Occasional
			November	0.0-1.0	>6.0	0.3-1.0	Brief	Frequent	Very brief	Frequent
			December	0.0-1.0	>6.0	0.5-1.0	Brief	Frequent	Very brief	Frequent
3D:										
Bailegap	B	High	Jan-Dec	---	---	---	---	None	---	None
4E:										
Bailegap	B	High	Jan-Dec	---	---	---	---	None	---	None
Lily	B	Very high	Jan-Dec	---	---	---	---	None	---	None
Dekalb	D	Very high	Jan-Dec	---	---	---	---	None	---	None
5C:										
Berks	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Weikert	D	Medium	Jan-Dec	---	---	---	---	None	---	None
5D:										
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
Weikert	D	High	Jan-Dec	---	---	---	---	None	---	None
5E:										
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
Weikert	D	High	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
6D:										
Bland	C	Very high	Jan-Dec	---	---	---	---	None	---	None
6E:										
Bland	C	Very high	Jan-Dec	---	---	---	---	None	---	None
7D:										
Brushy	B	Very high	Jan-Dec	---	---	---	---	None	---	None
7E:										
Brushy	B	Very high	Jan-Dec	---	---	---	---	None	---	None
8D:										
Calvin	C	High	Jan-Dec	---	---	---	---	None	---	None
8E:										
Calvin	C	High	Jan-Dec	---	---	---	---	None	---	None
9D:										
Calvin	C	High	Jan-Dec	---	---	---	---	None	---	None
10E:										
Calvin	C	High	Jan-Dec	---	---	---	---	None	---	None
Rough	D	Very high	Jan-Dec	---	---	---	---	None	---	None
11D:										
Carbo	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
11E:										
Carbo	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
12D:										
Carbo	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
13F:										
Culleoka	B	High	Jan-Dec	---	---	---	---	None	---	None
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
14D:										
Dekalb----------------	D	Very high	Jan-Dec	---	---	---	---	None	---	None
14E:										
Dekalb----------------	D	Very high	Jan-Dec	---	---	---	---	None	---	None
15D:										
Dekalb----------------	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
15F:										
Dekalb----------------	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
16C:										
Frederick-------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
16D:										
Frederick-------------	B	High	Jan-Dec	---	---	---	---	None	---	None
17C:										
Frederick-------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
17D:										
Frederick-------------	B	High	Jan-Dec	---	---	---	---	None	---	None
17E:										
Frederick-------------	B	High	Jan-Dec	---	---	---	---	None	---	None
18C:										
Frederick-------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
Watahala--------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
18D:										
Frederick-------------	B	High	Jan-Dec	---	---	---	---	None	---	None
Watahala--------------	B	High	Jan-Dec	---	---	---	---	None	---	None
19C:										
Gilpin----------------	C	Medium	Jan-Dec	---	---	---	---	None	---	None
19D:										
Gilpin----------------	C	High	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
20C:										
Jefferson-------------	B	Low	Jan-Dec	---	---	---	---	None	---	None
20D:										
Jefferson-------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
21C:										
Lily------------------	B	High	Jan-Dec	---	---	---	---	None	---	None
21D:										
Lily------------------	B	Very high	Jan-Dec	---	---	---	---	None	---	None
21E:										
Lily------------------	B	Very high	Jan-Dec	---	---	---	---	None	---	None
22A:										
Maurertown------------	D	Negligible	Jan-April	0.0-0.5	>6.0	0.5-1.0	Brief	Occasional	Very brief	Rare
			May	0.0-0.5	>6.0	0.3-1.0	Brief	Occasional	Very brief	Rare
			Jun-Oct	0.5-6.6	>6.0	0.3-1.0	Very brief	Occasional	Very brief	Very rare
			November	0.5-6.6	>6.0	0.3-1.0	Brief	Occasional	Very brief	Rare
			December	0.0-0.5	>6.0	0.5-1.0	Brief	Occasional	Very brief	Rare
23B:										
Nicelytown------------	C	Very high	Jan-March	1.5-2.5	>6.0	---	---	None	---	None
			April	2.5-6.6	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
			December	2.5-6.6	>6.0	---	---	None	---	None
23C:										
Nicelytown------------	C	Very high	Jan-March	1.5-2.5	>6.0	---	---	None	---	None
			April	2.5-6.6	>6.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
			December	2.5-6.6	>6.0	---	---	None	---	None
24B:										
Ogles-----------------	A	Very low	Jan-March	3.5-6.0	>6.0	---	---	None	Brief	Frequent
			April-Oct	---	---	---	---	None	Brief	Frequent
			Nov-Dec	3.5-6.0	>6.0	---	---	None	Brief	Frequent
25A:										
Ogles-----------------	A	Very low	Jan-March	3.5-6.0	>6.0	---	---	None	Very brief	Occasional
			April-Oct	---	---	---	---	None	Very brief	Occasional
			Nov-Dec	3.5-6.0	>6.0	---	---	None	Very brief	Occasional
Pope------------------	A	Very low	Jan-Dec	---	---	---	---	None	Very brief	Occasional

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
25A:										
Philo	B	Negligible	Jan-April	1.5-3.0	>6.0	0.5-1.0	Very brief	Occasional	Very brief	Occasional
			May	1.5-3.0	>6.0	0.3-1.0	Very brief	Occasional	Very brief	Occasional
			June	---	---	0.2-0.7	Very brief	Rare	Very brief	Occasional
			July-Oct	---	---	---	---	None	Very brief	Occasional
			November	---	---	0.2-0.7	Very brief	Rare	Very brief	Occasional
			December	1.5-3.0	>6.0	0.3-1.0	Very brief	Occasional	Very brief	Occasional
26C:										
Oriskany	B	Low	Jan-Dec	---	---	---	---	None	---	None
26D:										
Oriskany	B	Medium	Jan-Dec	---	---	---	---	None	---	None
27E:										
Oriskany	B	Medium	Jan-Dec	---	---	---	---	None	---	None
28A:										
Philo	B	Negligible	Jan-April	1.5-3.0	>6.0	0.5-1.0	Very brief	Occasional	Very brief	Occasional
			May	1.5-3.0	>6.0	0.3-1.0	Very brief	Occasional	Very brief	Occasional
			June	---	---	0.2-0.7	Very brief	Rare	Very brief	Rare
			July-Oct	---	---	---	---	None	---	None
			November	---	---	0.2-0.7	Very brief	Rare	Very brief	Rare
			December	1.5-3.0	>6.0	0.3-1.0	Very brief	Occasional	Very brief	Occasional
29A:										
Pope	A	Very low	Jan-May	---	---	---	---	None	Very brief	Occasional
			June	---	---	---	---	None	Very brief	Rare
			July-Oct	---	---	---	---	None	---	None
			November	---	---	---	---	None	Very brief	Rare
			December	---	---	---	---	None	Very brief	Occasional
30.										
Quarries, limestone										
31F:										
Rock outcrop.										
Beech Grove	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Benthole	B	High	Jan-Dec	---	---	---	---	None	---	None
32C:										
Shelocta	B	Medium	Jan-Dec	---	---	---	---	None	---	None
32D:										
Shelocta	B	High	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
33B:										
Slabtown	B	Medium	Jan-May	1.5-3.0	2.5-4.5	---	---	None	---	None
			June-Sept	---	---	---	---	None	---	None
			Oct-Dec	1.5-3.0	2.5-4.5	---	---	None	---	None
33C:										
Slabtown	B	Medium	Jan-May	1.5-3.0	2.5-4.5	---	---	None	---	None
			June-Sept	---	---	---	---	None	---	None
			Oct-Dec	1.5-3.0	2.5-4.5	---	---	None	---	None
34B:										
Tumbling	B	Medium	Jan-Dec	---	---	---	---	None	---	None
34C:										
Tumbling	B	Medium	Jan-Dec	---	---	---	---	None	---	None
34D:										
Tumbling	B	High	Jan-Dec	---	---	---	---	None	---	None
35C:										
Tumbling	B	Medium	Jan-Dec	---	---	---	---	None	---	None
35D:										
Tumbling	B	High	Jan-Dec	---	---	---	---	None	---	None
36C:										
Tumbling	B	Medium	Jan-Dec	---	---	---	---	None	---	None
36D:										
Tumbling	B	High	Jan-Dec	---	---	---	---	None	---	None
37:										
Udorthents	B	Very high	Jan-Dec	---	---	---	---	None	---	None
Urban land.										
38C:										
Watahala	B	Medium	Jan-Dec	---	---	---	---	None	---	None
38D:										
Watahala	B	High	Jan-Dec	---	---	---	---	None	---	None
38E:										
Watahala	B	High	Jan-Dec	---	---	---	---	None	---	None
38F:										
Watahala	B	High	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
39C:										
Watahala	B	Medium	Jan-Dec	---	---	---	---	None	---	None
39D:										
Watahala	B	High	Jan-Dec	---	---	---	---	None	---	None
39E:										
Watahala	B	High	Jan-Dec	---	---	---	---	None	---	None
40F:										
Weikert	D	High	Jan-Dec	---	---	---	---	None	---	None
Rough	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
41D:										
Westmoreland	B	High	Jan-Dec	---	---	---	---	None	---	None
Culleoka	B	High	Jan-Dec	---	---	---	---	None	---	None
41E:										
Westmoreland	B	High	Jan-Dec	---	---	---	---	None	---	None
Culleoka	B	High	Jan-Dec	---	---	---	---	None	---	None
W.										
Water										

Table 19.—Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In				
1B:						
Alonzville	---	---	---	Moderate	Low	High
2A:						
Atkins	---	---	---	High	High	High
3D:						
Bailegap	Bedrock (paralithic)	40-60	Strongly cemented	Moderate	Low	High
	Bedrock (lithic)	40-60	Indurated			
4E:						
Bailegap	Bedrock (paralithic)	40-60	Strongly cemented	Moderate	Low	High
	Bedrock (lithic)	40-60	Indurated			
Lily	Bedrock (lithic)	20-40	Indurated	Moderate	Low	High
Dekalb	Bedrock (lithic)	20-40	Indurated	Moderate	Low	High
5C:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Weikert	Bedrock (lithic)	10-20	Very strongly cemented	Moderate	Low	High
5D:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Weikert	Bedrock (lithic)	10-20	Very strongly cemented	Moderate	Low	High
5E:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Weikert	Bedrock (lithic)	10-20	Very strongly cemented	Moderate	Low	High
6D:						
Bland	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
6E:						
Bland	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
7D:						
Brushy	Bedrock (lithic)	20-40	Indurated	Moderate	Moderate	High
7E:						
Brushy	Bedrock (lithic)	20-40	Indurated	Moderate	Moderate	High

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In				
8D:						
Calvin-------------	Bedrock (lithic)	20-40	Indurated	Moderate	Low	Moderate
8E:						
Calvin-------------	Bedrock (lithic)	20-40	Indurated	Moderate	Low	Moderate
9D:						
Calvin-------------	Bedrock (lithic)	20-40	Indurated	Moderate	Low	Moderate
10E:						
Calvin-------------	Bedrock (lithic)	20-40	Indurated	Moderate	Low	Moderate
Rough--------------	Bedrock (lithic)	4-10	Indurated	Moderate	Moderate	High
11D:						
Carbo--------------	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
Rock outcrop-------	Bedrock (lithic)	0-0	Indurated	None	---	---
11E:						
Carbo--------------	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
Rock outcrop-------	Bedrock (lithic)	0-0	Indurated	None	---	---
12D:						
Carbo--------------	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
Rock outcrop-------	Bedrock (lithic)	0-0	Indurated	None	---	---
13F:						
Culleoka-----------	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Berks--------------	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
14D:						
Dekalb-------------	Bedrock (lithic)	20-40	Indurated	Moderate	Low	High
14E:						
Dekalb-------------	Bedrock (lithic)	20-40	Indurated	Moderate	Low	High
15D:						
Dekalb-------------	Bedrock (lithic)	20-40	Indurated	Moderate	Low	Moderate
Rock outcrop-------	Bedrock (lithic)	0-0	Indurated	None	---	---
15F:						
Dekalb-------------	Bedrock (lithic)	20-40	Indurated	Moderate	Low	Moderate
Rock outcrop-------	Bedrock (lithic)	0-0	Indurated	None	---	---
16C:						
Frederick----------	---	---	---	Moderate	Moderate	High
16D:						
Frederick----------	---	---	---	Moderate	Moderate	High
17C:						
Frederick----------	---	---	---	Moderate	Moderate	High

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
17D:						
Frederick	---	---	---	Moderate	Moderate	High
17E:						
Frederick	---	---	---	Moderate	Moderate	High
18C:						
Frederick	---	---	---	Moderate	Moderate	High
Watahala	Strongly contrasting textural stratification	20-50	---	Moderate	High	High
18D:						
Frederick	---	---	---	Moderate	Moderate	High
Watahala	Strongly contrasting textural stratification	20-50	---	Moderate	High	High
19C:						
Gilpin	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
19D:						
Gilpin	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
20C:						
Jefferson	---	---	---	Moderate	Moderate	High
20D:						
Jefferson	---	---	---	Moderate	Moderate	High
21C:						
Lily	Bedrock (lithic)	20-40	Indurated	Moderate	Moderate	High
21D:						
Lily	Bedrock (lithic)	20-40	Indurated	Moderate	Moderate	High
21E:						
Lily	Bedrock (lithic)	20-40	Indurated	Moderate	Moderate	High
22A:						
Maurertown	---	---	---	High	High	High
23B:						
Nicelytown	---	---	---	High	Moderate	High
23C:						
Nicelytown	---	---	---	High	Moderate	High
24B:						
Ogles	---	---	---	Moderate	Low	Moderate

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In				
25A:						
Ogles	---	---	---	Moderate	Low	Moderate
Pope	---	---	---	Moderate	Low	Low
Philo	---	---	---	Moderate	Low	High
26C:						
Oriskany	---	---	---	Moderate	Moderate	High
26D:						
Oriskany	---	---	---	Moderate	Moderate	High
27E:						
Oriskany	---	---	---	Moderate	Moderate	High
28A:						
Philo	---	---	---	Moderate	Low	High
29A:						
Pope	---	---	---	Moderate	Low	Low
30.						
Quarries, limestone						
31F:						
Rock outcrop	Bedrock (lithic)	0-0	Indurated	None	---	---
Beech Grove	Bedrock (lithic)	1-8	Indurated	Moderate	Moderate	Low
Benthole	---	---	---	Moderate	Moderate	Low
32C:						
Shelocta	---	---	---	Moderate	Low	High
32D:						
Shelocta	---	---	---	Moderate	Low	High
33B:						
Slabtown	---	---	---	Moderate	Moderate	Low
33C:						
Slabtown	---	---	---	Moderate	Moderate	Low
34B:						
Tumbling	---	---	---	Moderate	Moderate	Moderate
34C:						
Tumbling	---	---	---	Moderate	Moderate	Moderate
34D:						
Tumbling	---	---	---	Moderate	Moderate	Moderate
35C:						
Tumbling	---	---	---	Moderate	Moderate	Moderate
35D:						
Tumbling	---	---	---	Moderate	Moderate	Moderate

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In				
36C:						
Tumbling-----------	---	---	---	Moderate	Moderate	Moderate
36D:						
Tumbling-----------	---	---	---	Moderate	Moderate	Moderate
37:						
Udorthents---------	---	---	---	Moderate	High	Moderate
Urban land.						
38C:						
Watahala-----------	Strongly contrasting textural stratification	20-50	---	Moderate	High	High
38D:						
Watahala-----------	Strongly contrasting textural stratification	20-50	---	Moderate	High	High
38E:						
Watahala-----------	Strongly contrasting textural stratification	20-50	---	Moderate	High	High
38F:						
Watahala-----------	Strongly contrasting textural stratification	20-50	---	Moderate	High	High
39C:						
Watahala-----------	Strongly contrasting textural stratification	20-50	---	Moderate	High	High
39D:						
Watahala-----------	Strongly contrasting textural stratification	20-50	---	Moderate	High	High
39E:						
Watahala-----------	Strongly contrasting textural stratification	20-50	---	Moderate	High	High
40F:						
Weikert------------	Bedrock (lithic)	10-20	Very strongly cemented	Moderate	Low	High
Rough--------------	Bedrock (lithic)	4-10	Indurated	Moderate	Moderate	High
Rock outcrop.						

Table 19.—Soil Features—Continued

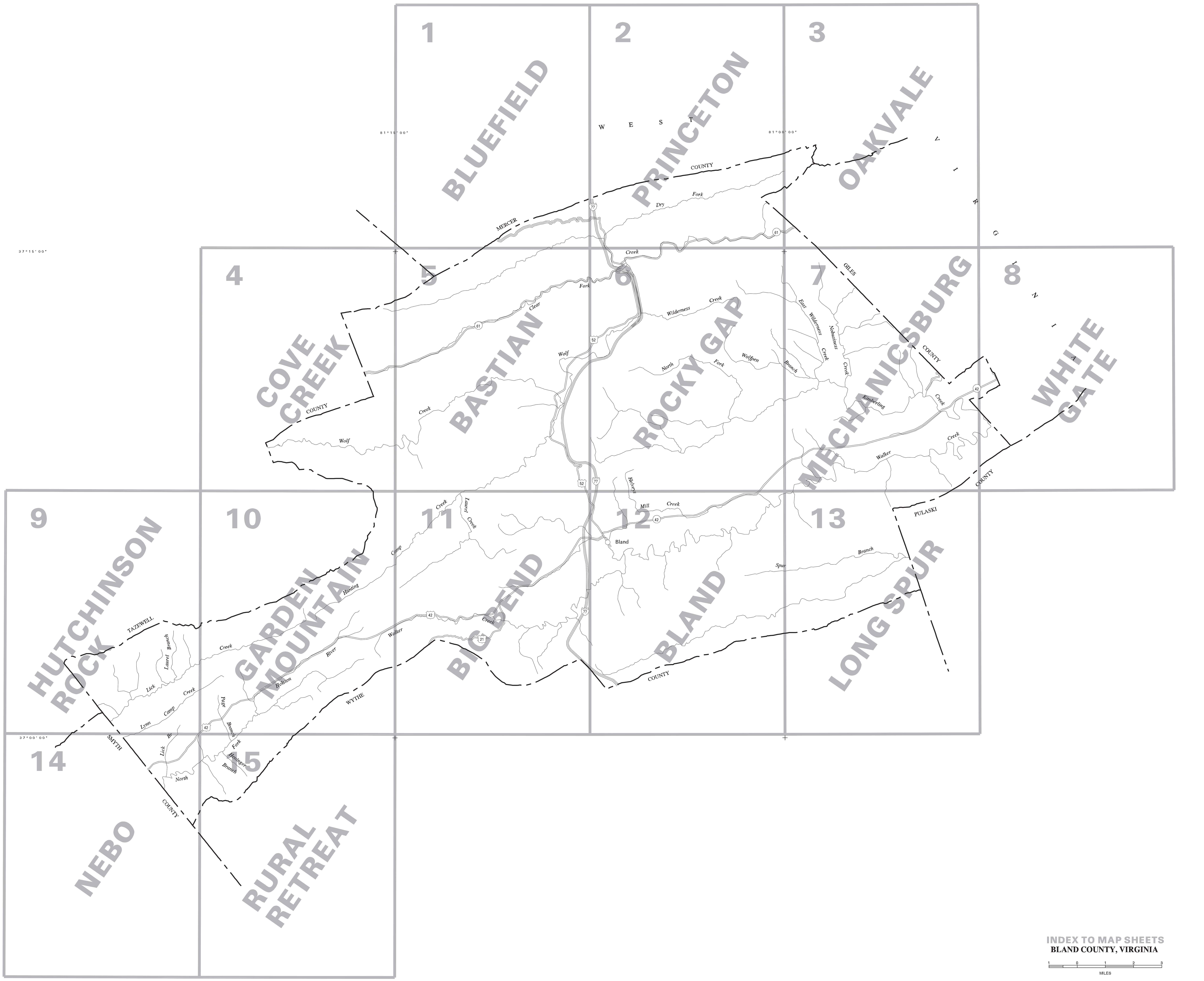
Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
41D:						
Westmoreland-------	Bedrock (lithic)	40-60	Very strongly cemented	Moderate	Low	High
Culleoka-----------	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
41E:						
Westmoreland-------	Bedrock (lithic)	40-60	Very strongly cemented	Moderate	Low	High
Culleoka-----------	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
W.						
Water						

Table 20.—Classification of the Soils

Soil name	Family or higher taxonomic class
Alonzville	Fine-loamy, siliceous, semiactive, mesic Typic Hapludults
Atkins	Fine-loamy, mixed, active, acid, mesic Fluvaquentic Endoaquepts
Bailegap	Fine-loamy, siliceous, semiactive, mesic Typic Hapludults
Beech Grove	Loamy, mixed, superactive, nonacid, mesic Lithic Udorthents
Benthole	Loamy-skeletal, mixed, superactive, mesic Typic Hapludalfs
Berks	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
Bland	Fine, mixed, semiactive, mesic Typic Hapludalfs
Brushy	Loamy-skeletal, siliceous, semiactive, mesic Typic Hapludults
Calvin	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
Carbo	Very fine, mixed, active, mesic Typic Hapludalfs
Culleoka	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
Dekalb	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
Frederick	Fine, mixed, semiactive, mesic Typic Paleudults
Gilpin	Fine-loamy, mixed, active, mesic Typic Hapludults
Jefferson	Fine-loamy, siliceous, semiactive, mesic Typic Hapludults
Lily	Fine-loamy, siliceous, semiactive, mesic Typic Hapludults
Maurertown	Fine, mixed, semiactive, mesic Typic Endoaqualfs
Nicelytown	Fine-loamy, siliceous, semiactive, mesic Aquic Paleudults
Ogles	Loamy-skeletal, siliceous, active, mesic Fluventic Dystrudepts
Oriskany	Loamy-skeletal, siliceous, semiactive, mesic Typic Hapludults
Philo	Coarse-loamy, mixed, active, mesic Fluvaquentic Dystrudepts
Pope	Coarse-loamy, mixed, active, mesic Fluventic Dystrudepts
Rough	Loamy, mixed, active, acid, mesic Lithic Udorthents
Shelocta	Fine-loamy, mixed, active, mesic Typic Hapludults
Slabtown	Fine-loamy, mixed, semiactive, mesic Aquic Paleudalfs
Tumbling	Fine, kaolinitic, mesic Typic Paleudults
Udorthents	Udorthents
Watahala	Fine-loamy over clayey, siliceous over mixed, subactive, mesic Typic Paleudults
Weikert	Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts
Westmoreland	Fine-loamy, mixed, active, mesic Ultic Hapludalfs

NRCS Accessibility Statement

The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at http://offices.sc.egov.usda.gov/locator/app.



INDEX TO MAP SHEETS
BLAND COUNTY, VIRGINIA

MILES
KILOMETERS
SCALE = 1:110000

SOIL LEGEND

Map symbols consist of a combination of numbers and letters. The symbols are listed numerically. The numbers represent the kind of soil or soils in the map unit. A capital letter indicates the class slope. Symbols without a slope letter are for miscellaneous areas and for areas of Udorthents that have a wide slope range as described in the map unit description.

SYMBOL	NAME
1B	Alonzville silt loam, 3 to 8 percent slopes, rarely flooded
2A	Atkins fine sandy loam, 0 to 3 percent slopes, frequently flooded
3D	Bailegap fine sandy loam, 15 to 35 percent slopes, very stony
4E	Bailegap-Lily-Dekalb complex, 35 to 70 percent slopes, very stony
5C	Berks-Weikert complex, 8 to 15 percent slopes
5D	Berks-Weikert complex, 15 to 35 percent slopes
5E	Berks-Weikert complex, 35 to 70 percent slopes
6D	Bland silty clay loam, 15 to 25 percent slopes
6E	Bland silty clay loam, 25 to 35 percent slopes
7D	Brushy extremely gravelly loam, 8 to 35 percent slopes, very stony
7E	Brushy extremely gravelly loam, 35 to 55 percent slopes, very stony
8D	Calvin channery silt loam, 15 to 35 percent slopes
8E	Calvin channery silt loam, 35 to 70 percent slopes
9D	Calvin channery silt loam, 15 to 35 percent slopes, very stony
10E	Calvin-Rough complex, 35 to 70 percent slopes, very stony
11D	Carbo-Rock outcrop complex, 8 to 35 percent slopes, eroded
11E	Carbo-Rock outcrop complex, 35 to 55 percent slopes, eroded
12D	Carbo-Rock outcrop complex, karst, 8 to 35 percent slopes, eroded
13F	Culleoka-Berks complex, 35 to 70 percent slopes
14D	Dekalb channery sandy loam, 8 to 35 percent slopes, extremely stony
14E	Dekalb channery sandy loam, 35 to 55 percent slopes, extremely stony
15D	Dekalb-Rock outcrop complex, 8 to 35 percent slopes, extremely stony
15F	Dekalb-Rock outcrop complex, 35 to 80 percent slopes, extremely stony
16C	Frederick silt loam, 8 to 15 percent slopes
16D	Frederick silt loam, 15 to 25 percent slopes
17C	Frederick gravelly silt loam, 8 to 15 percent slopes
17D	Frederick gravelly silt loam, 15 to 25 percent slopes
17E	Frederick gravelly silt loam, 25 to 35 percent slopes
18C	Frederick and Watahala soils, karst, 8 to 15 percent slopes
18D	Frederick and Watahala soils, karst, 15 to 25 percent slopes
19C	Gilpin silt loam, 8 to 15 percent slopes
19D	Gilpin silt loam, 15 to 25 percent slopes
20C	Jefferson cobbly loam, 8 to 15 percent slopes
20D	Jefferson cobbly loam, 15 to 25 percent slopes
21C	Lily sandy loam, 8 to 15 percent slopes, very stony
21D	Lily sandy loam, 15 to 35 percent slopes, very stony
21E	Lily sandy loam, 35 to 55 percent slopes, very stony
22A	Maurertown silt loam, 0 to 3 percent slopes, rarely flooded
23B	Nicelytown silt loam, 3 to 8 percent slopes
23C	Nicelytown silt loam, 8 to 15 percent slopes
24B	Ogles very stony loam, 0 to 5 percent slopes, frequently flooded
25A	Ogles-Pope-Philo complex, 0 to 3 percent slopes, occasionally flooded
26C	Oriskany gravelly fine sandy loam, 8 to 15 percent slopes, extremely stony
26D	Oriskany gravelly fine sandy loam, 15 to 35 percent slopes, extremely stony
27E	Oriskany gravelly fine sandy loam, 15 to 55 percent slopes, very rubbly
28A	Philo fine sandy loam, 0 to 3 percent slopes, occasionally flooded
29A	Pope fine sandy loam, 0 to 3 percent slopes, occasionally flooded
30	Quarries, limestone
31F	Rock outcrop-Beech Grove-Benthole complex, 25 to 100 percent slopes
32C	Shelocta silt loam, 8 to 15 percent slopes
32D	Shelocta silt loam, 15 to 25 percent slopes
33B	Slabtown silt loam, 3 to 8 percent slopes
33C	Slabtown silt loam, 8 to 15 percent slopes
34B	Tumbling loam, 3 to 8 percent slopes
34C	Tumbling loam, 8 to 15 percent slopes
34D	Tumbling loam, 15 to 25 percent slopes
35C	Tumbling loam, karst, 8 to 15 percent slopes
35D	Tumbling loam, karst, 15 to 25 percent slopes
36C	Tumbling loam, 8 to 15 percent slopes, very stony
36D	Tumbling loam, 15 to 35 percent slopes, very stony
37	Udorthents-Urban land complex, 0 to 25 percent slopes
38C	Watahala gravelly silt loam, 8 to 15 percent slopes
38D	Watahala gravelly silt loam, 15 to 25 percent slopes
38E	Watahala gravelly silt loam, 25 to 35 percent slopes
38F	Watahala gravelly silt loam, 35 to 55 percent slopes
39C	Watahala gravelly silt loam, 8 to 15 percent slopes, extremely stony
39D	Watahala gravelly silt loam, 15 to 35 percent slopes, extremely stony
39E	Watahala gravelly silt loam, 35 to 55 percent slopes, extremely stony
40F	Weikert-Rough-Rock outcrop complex, 70 to 100 percent slopes
41D	Westmoreland-Culleoka complex, 15 to 25 percent slopes
41E	Westmoreland-Culleoka complex, 25 to 35 percent slopes
W	Water

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state, or province
- County or parish
- Reservation (national forest or park, state forest or park)
- Limit of soil survey (label) and/or denied access area
- Field sheet matchline & neatline

TRANSPORTATION

- Divided roads
- Other roads

ROAD EMBLEM & DESIGNATIONS

- Federal 287
- State 52

HYDROGRAPHIC FEATURES

STREAMS

- Perennial, double line
- Unclassified stream
- Drainage end (Indicates direction of flow)

SPECIAL SYMBOLS FOR SOIL SURVEY AND SSURGO

SOIL DELINEATIONS AND SYMBOLS 5B 11B

MISCELLANEOUS SURFACE FEATURES

- Gravelly spot
- Rock outcrop (includes sandstone and shale)
- Sinkhole
- Stony spot
- Very stony spot
- Wet spot

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

BLAND COUNTY, VIRGINIA
BLUEFIELD QUADRANGLE
SHEET NUMBER 1 OF 15

Joins sheet 4, Cove Creek

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

2 PRINCETON
4 COVE CREEK
5 BASTIAN
6 ROCKY GAP

INDEX TO ADJOINING 7.5 MAPS

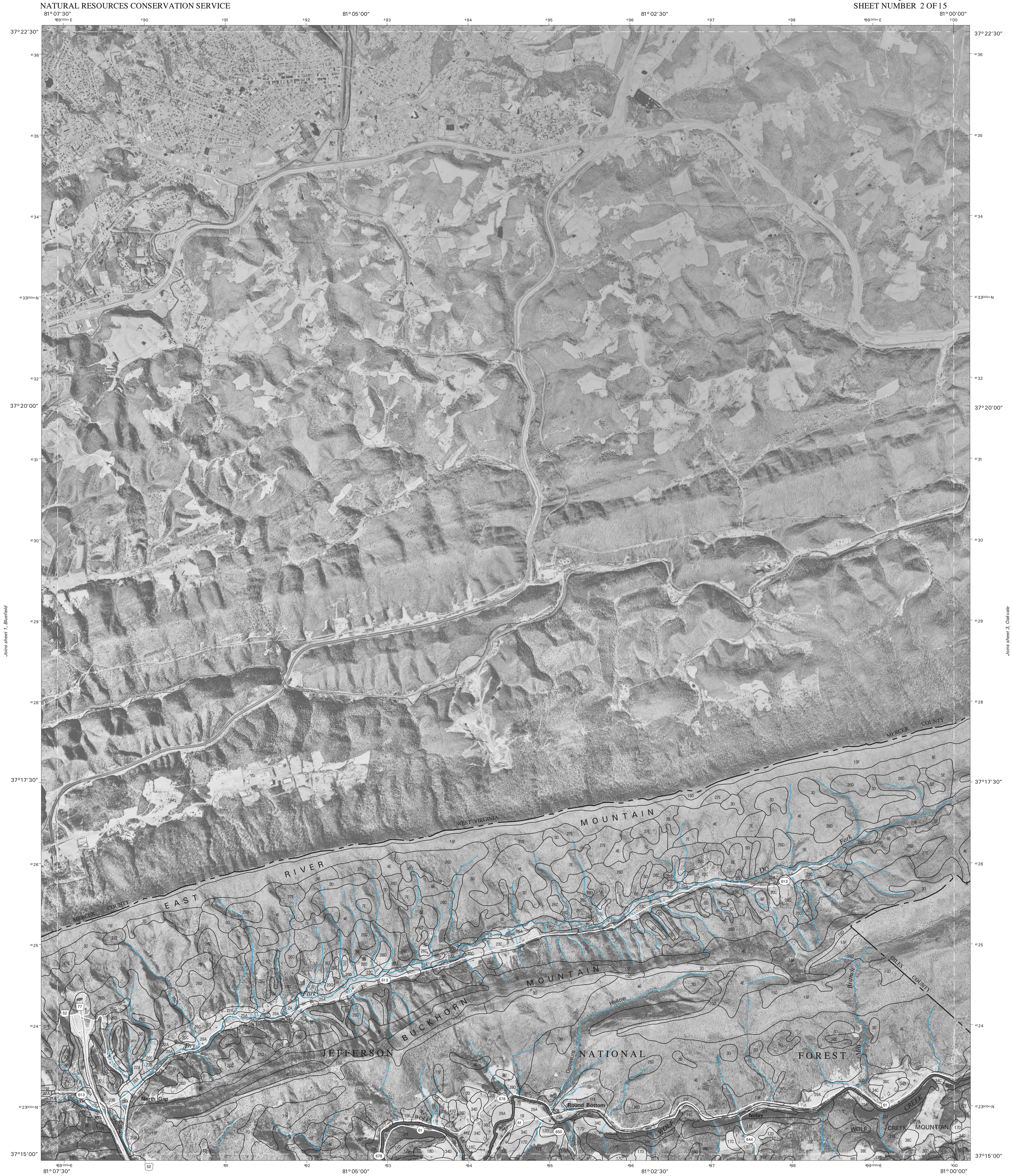
BLUEFIELD, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 1 OF 15

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 6, Rocky Gap

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

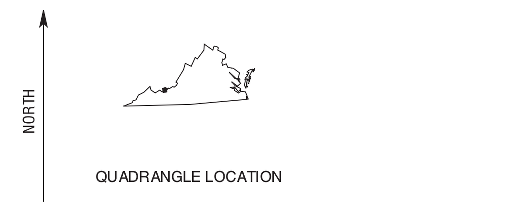
BLAND COUNTY, VIRGINIA
PRINCETON QUADRANGLE
SHEET NUMBER 2 OF 15



Joins sheet 5, Bastian

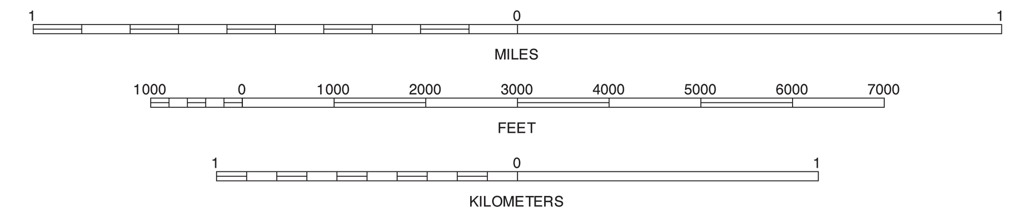
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

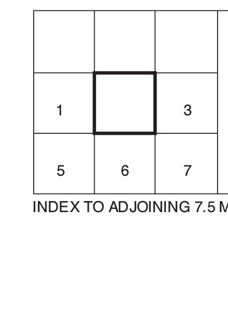
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

SCALE 1:24000





1 BLUEFIELD
3 OAKVALE
5 BASTIAN
6 ROCKY GAP
7 MECHANICSBURG

INDEX TO ADJOINING 7.5 MAPS

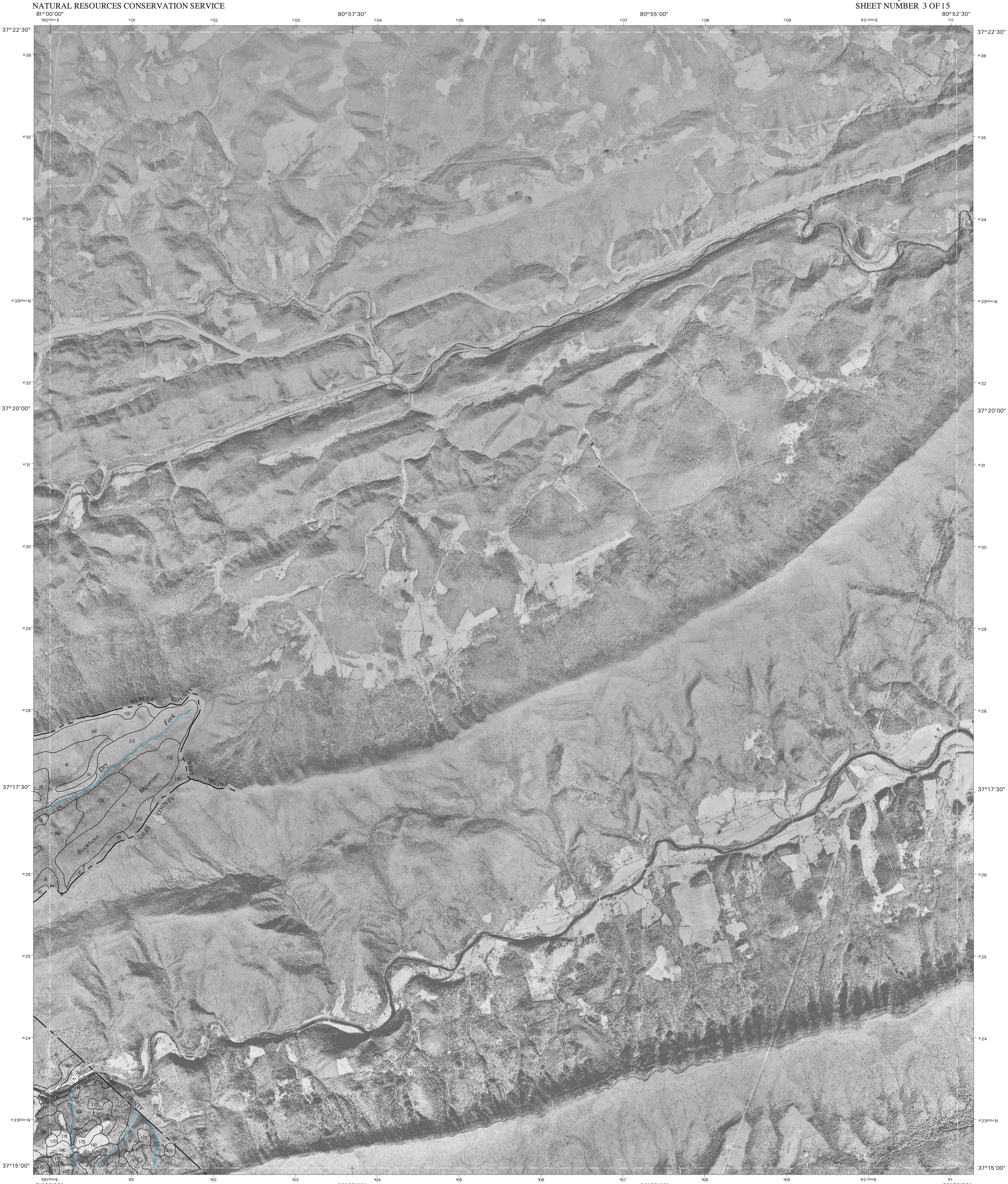
Joins sheet 7, Mechanicsburg

PRINCETON, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 2 OF 15

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

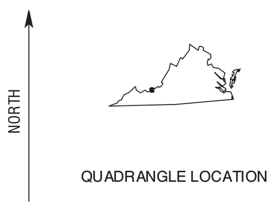
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

BLAND COUNTY, VIRGINIA
OAKVALE QUADRANGLE
SHEET NUMBER 3 OF 15



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

SCALE 1:24000

MILES: 1 0 1

FEET: 1000 0 1000 2000 3000 4000 5000 6000 7000

KILOMETERS: 1 0 1

2	■	
6	7	8

2 PRINCETON
6 ROCKY GAP
7 MECHANICSBURG
8 WHITE GATE

INDEX TO ADJOINING 7.5 MAPS

OAKVALE, VIRGINIA

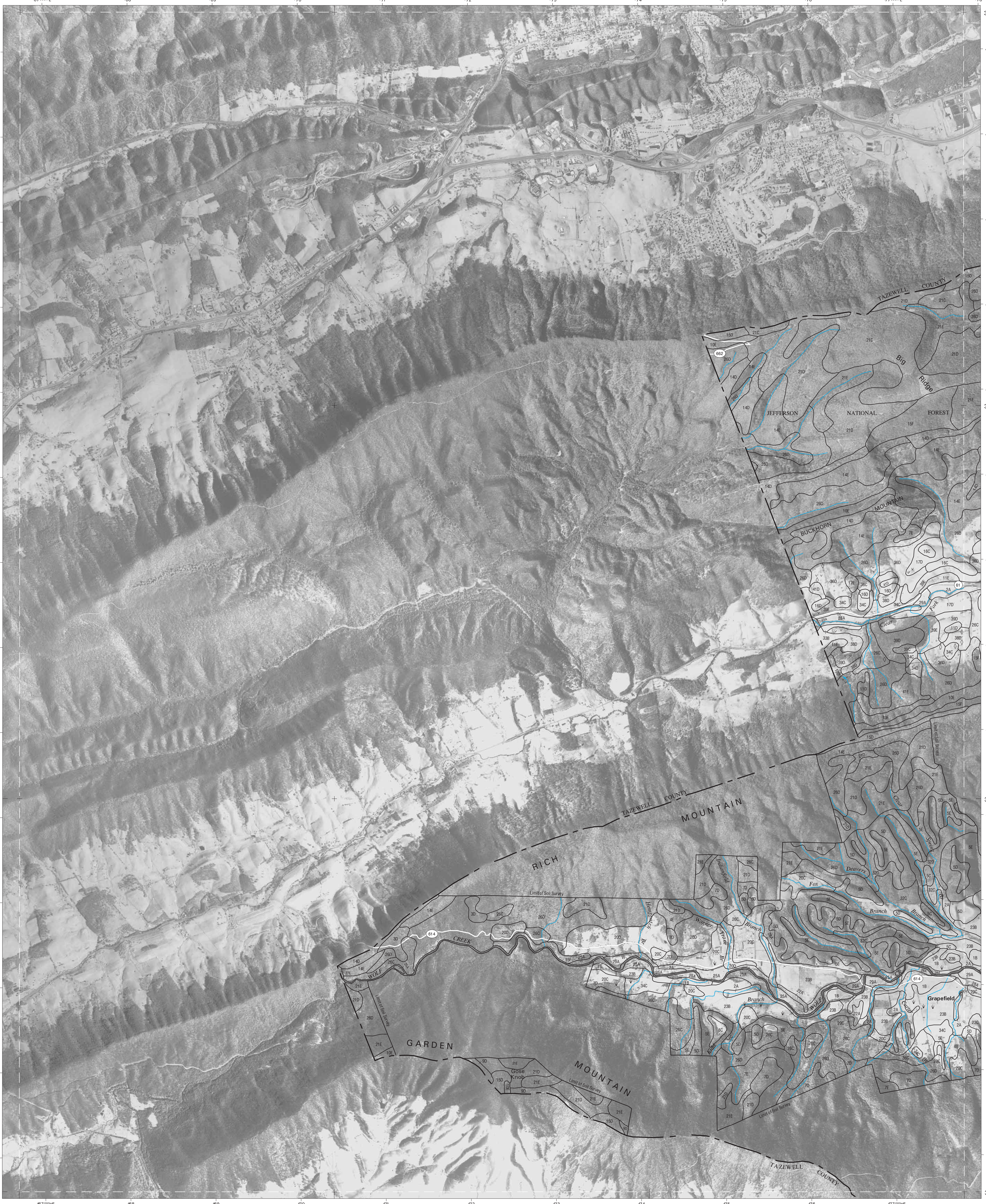
7.5 MINUTE SERIES
SHEET NUMBER 3 OF 15

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

BLAND COUNTY, VIRGINIA
COVE CREEK QUADRANGLE
SHEET NUMBER 4 OF 15

Joins sheet 1, Bluefield



Joins sheet 5, Bastian

Joins sheet 10, Garden Mountain

Joins sheet 9, Hutchinson Rock

Joins sheet 11, Big Bend

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

INDEX TO ADJOINING 7.5 MAPS

1 BLUEFIELD
5 BASTIAN
9 HUTCHINSON ROCK
10 GARDEN MOUNTAIN
11 BIG BEND

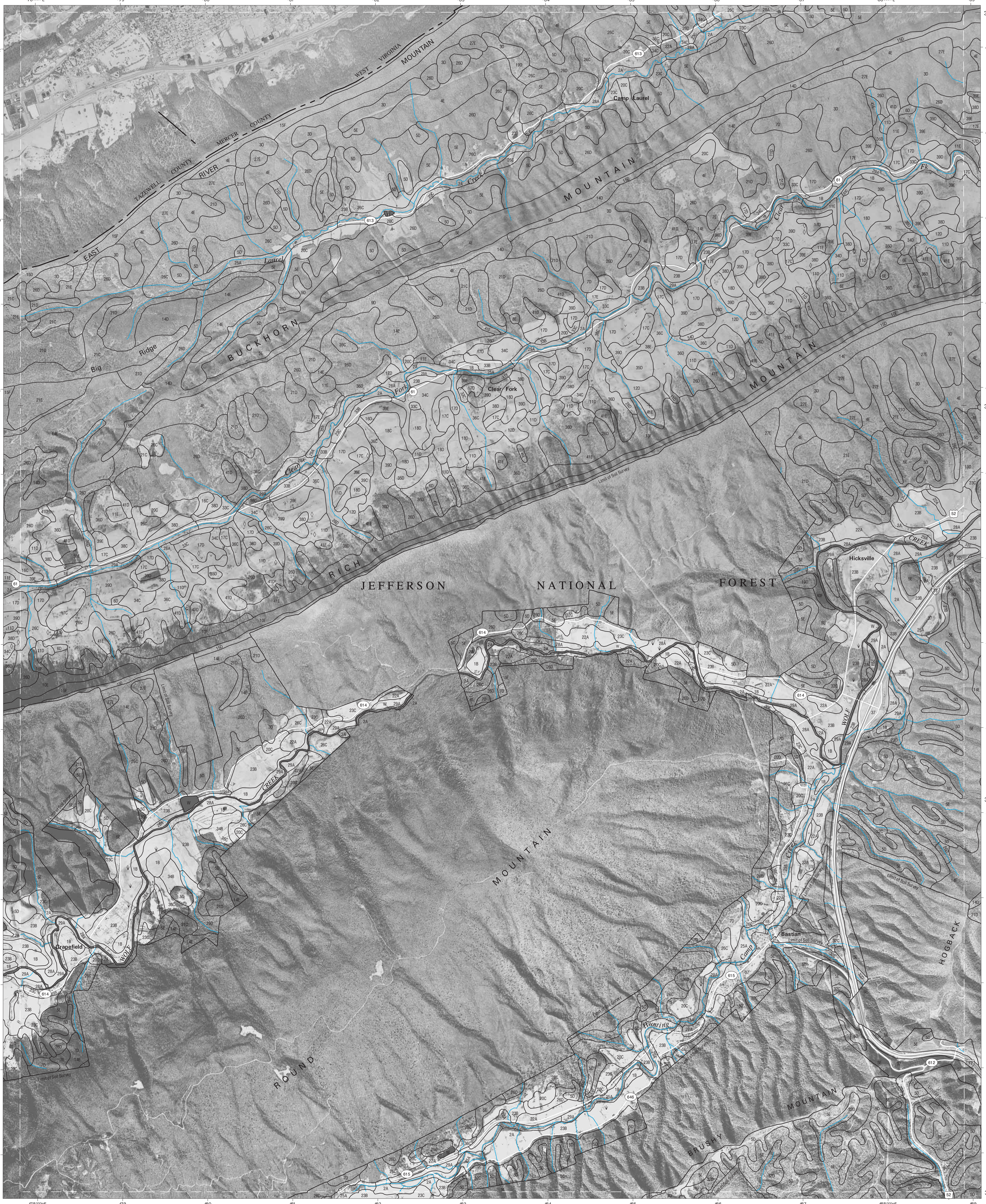
COVE CREEK, VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 4 OF 15

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

BLAND COUNTY, VIRGINIA
BASTIAN QUADRANGLE
SHEET NUMBER 5 OF 15



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

INDEX TO ADJOINING 7.5 MAPS

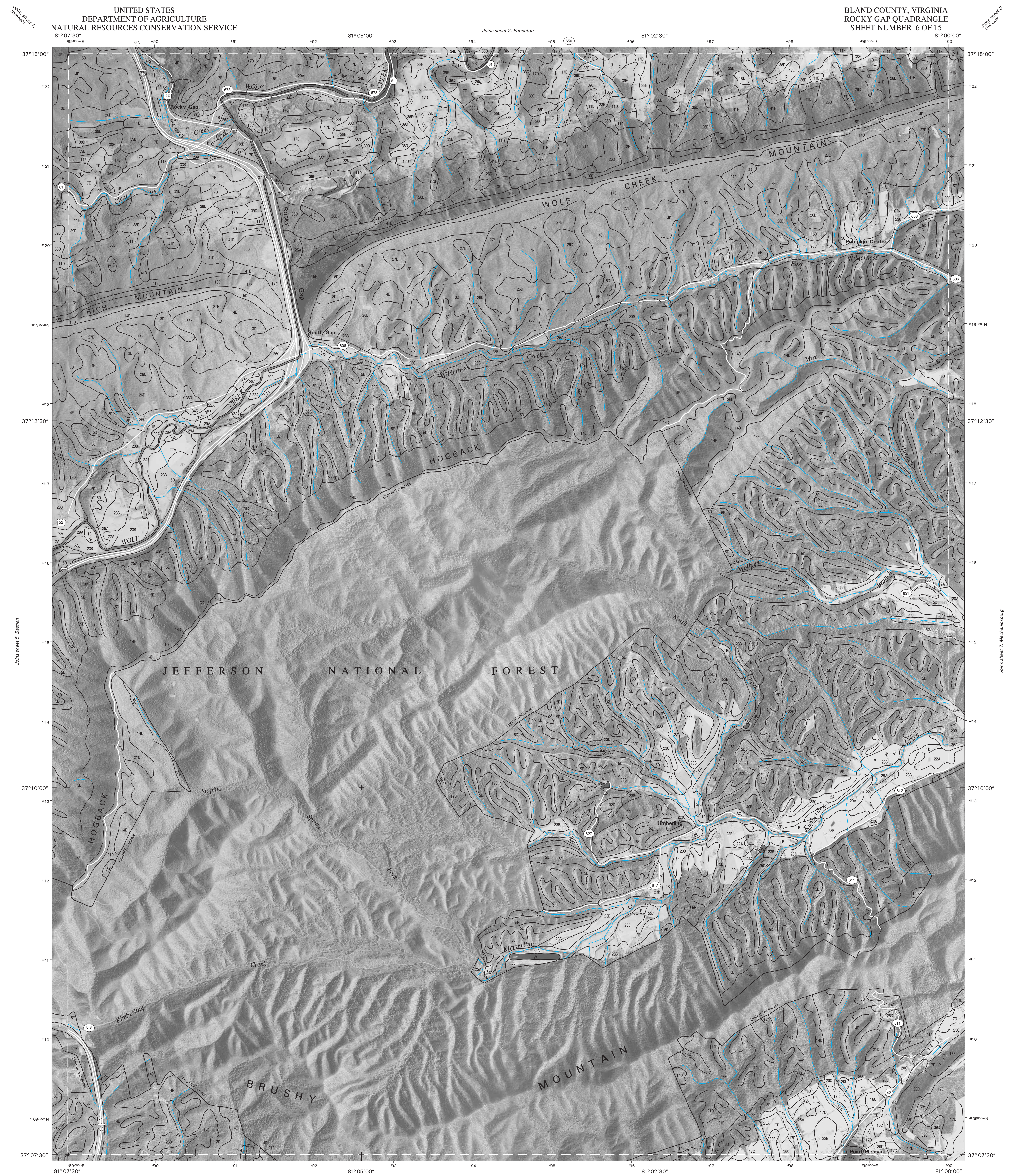
1 BLUEFIELD
2 PRINCETON
4 COVE CREEK
6 ROCKY GAP
10 GARDEN MOUNTAIN
11 BIG BEND
12 BLAND

BASTIAN, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 5 OF 15

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

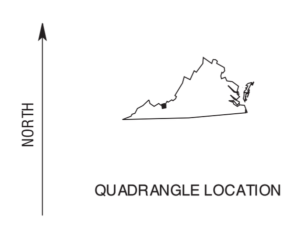
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

BLAND COUNTY, VIRGINIA
ROCKY GAP QUADRANGLE
SHEET NUMBER 6 OF 15



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

1	2	3
5		7
11	12	13

1 BLUEFIELD
2 PRINCETON
3 OAKVALE
5 BASTIAN
7 MECHANICSBURG
11 BIG BEND
12 BLAND
13 LONG SPUR

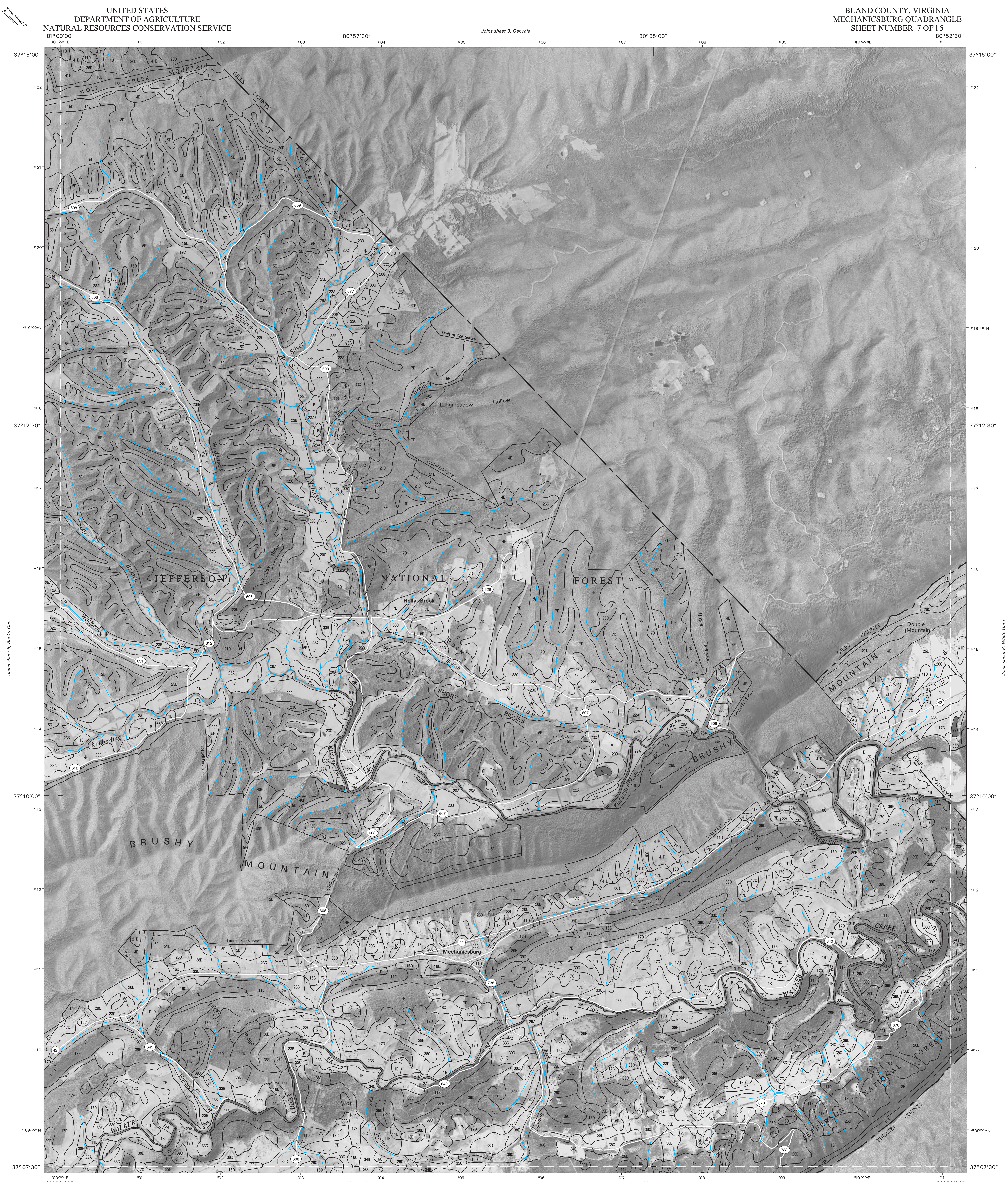
INDEX TO ADJOINING 7.5 MAPS

ROCKY GAP, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 6 OF 15

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

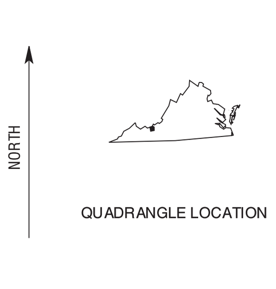
BLAND COUNTY, VIRGINIA
MECHANICSBURG QUADRANGLE
SHEET NUMBER 7 OF 15



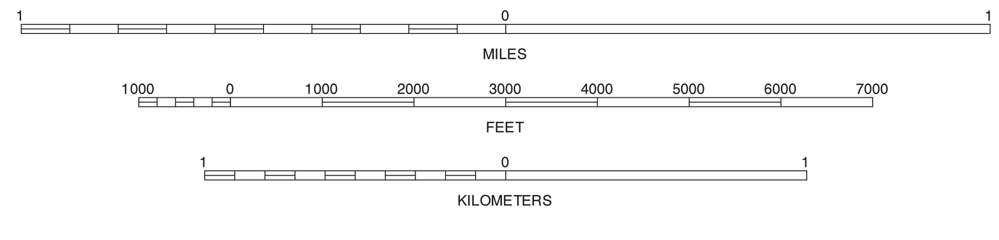
Scale 1:24000

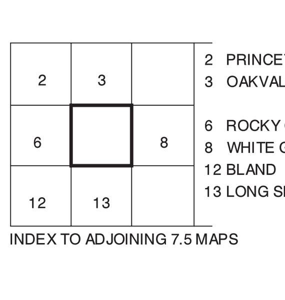
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



SCALE 1:24000





MECHANICSBURG, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 7 OF 15

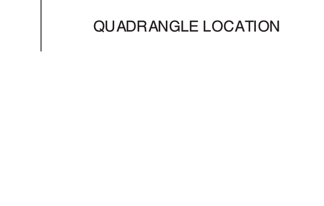
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

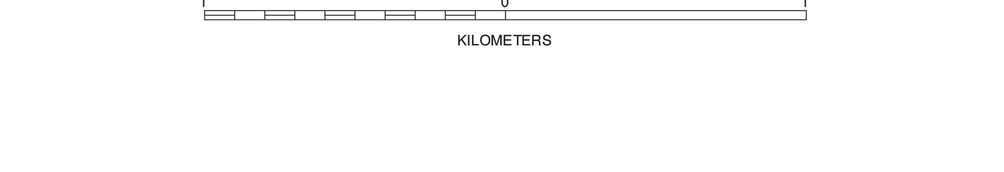
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

BLAND COUNTY, VIRGINIA
WHITE GATE QUADRANGLE
SHEET NUMBER 8 OF 15

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



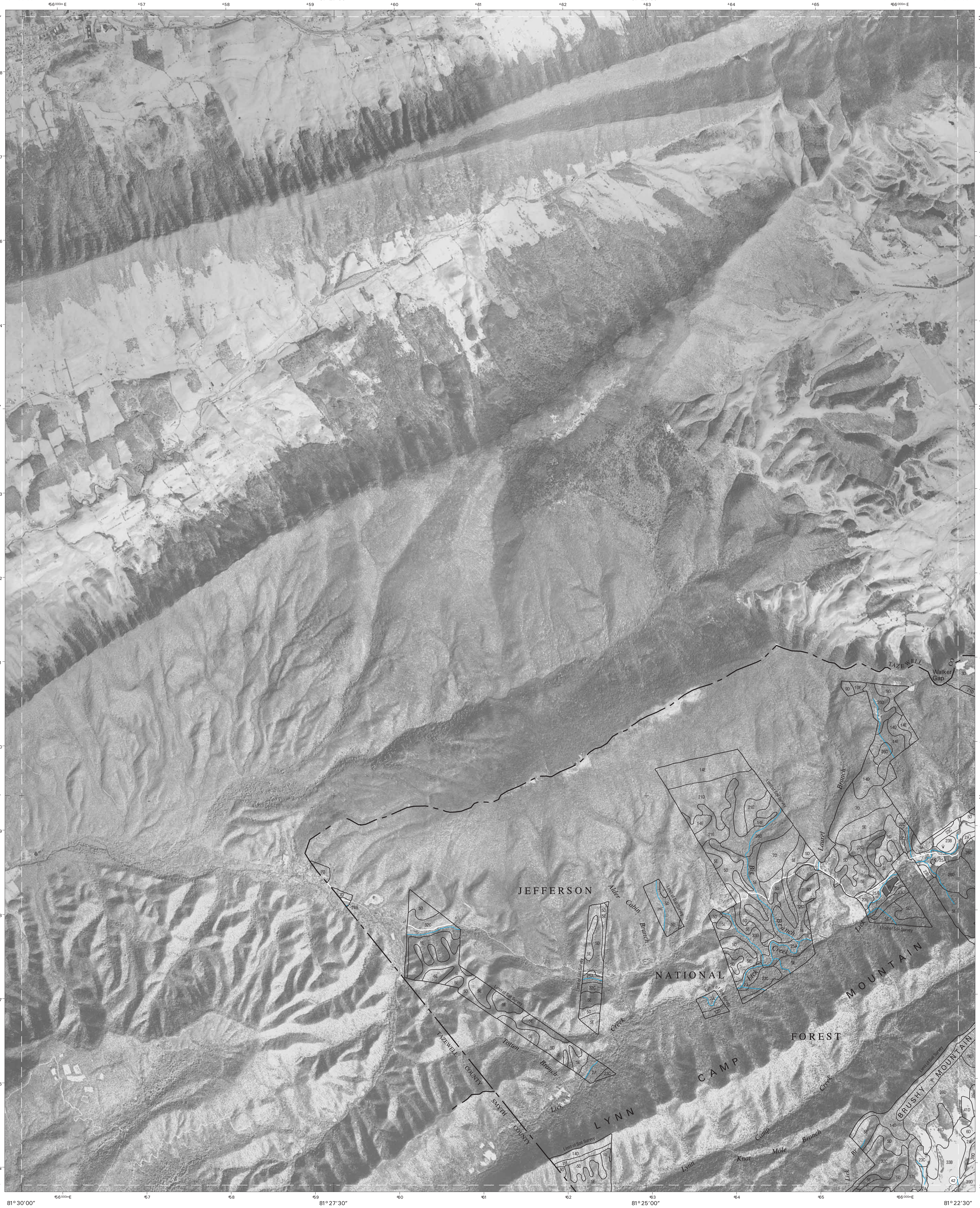


WHITE GATE, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 8 OF 15

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

BLAND COUNTY, VIRGINIA
HUTCHINSON ROCK QUADRANGLE
SHEET NUMBER 9 OF 15



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

		4
	■	10
	14	15

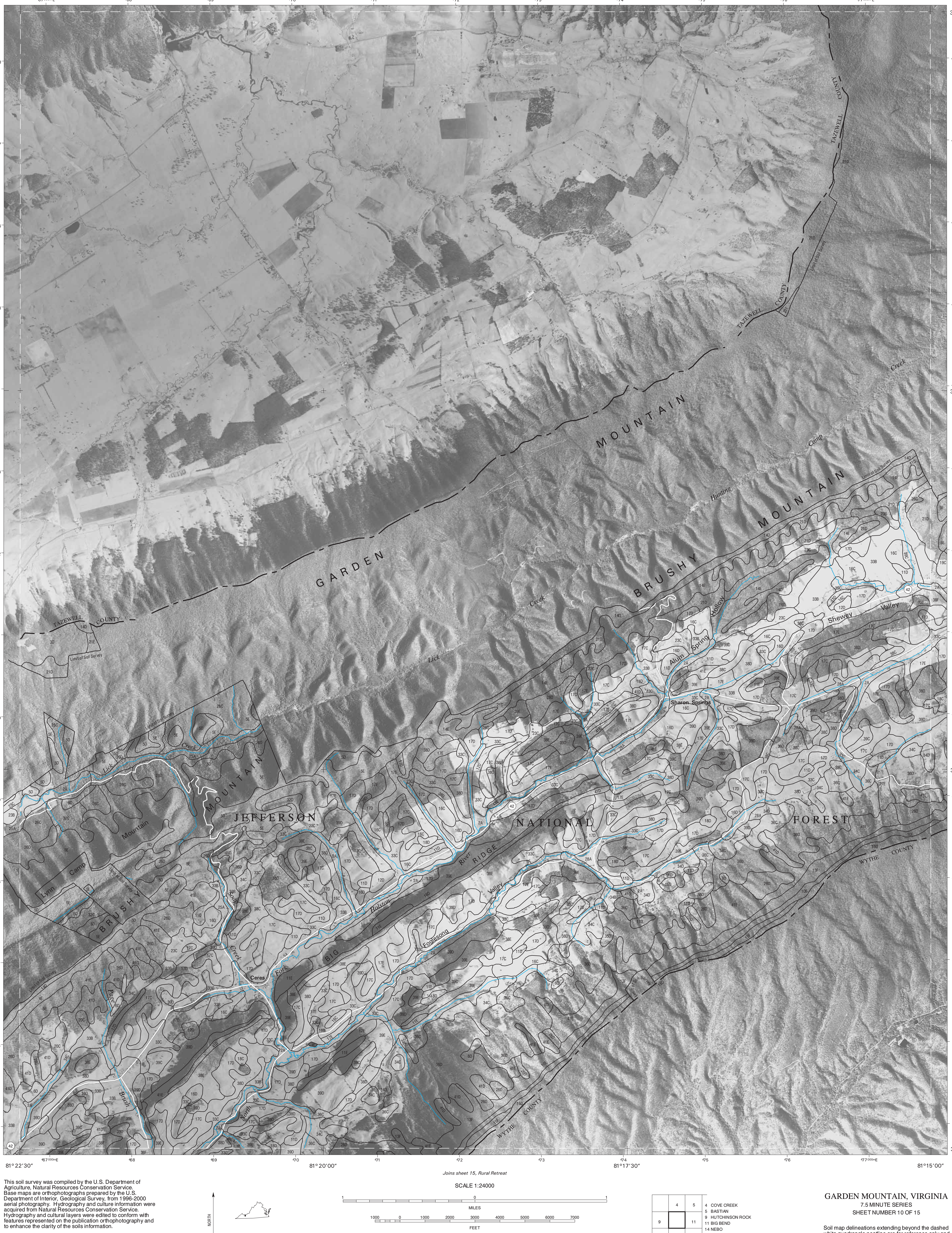
INDEX TO ADJOINING 7.5 MAPS

4 COVE CREEK
10 GARDEN MOUNTAIN
14 NEBO
15 RURAL RETREAT

HUTCHINSON ROCK, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 9 OF 15

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 4, Cove Creek
Joins sheet 5, Bastian
Joins sheet 9, Hutchinson Rock
Joins sheet 11, Big Bend
Joins sheet 14, Nebo
Joins sheet 15, Rural Retreat



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

QUADRANGLE LOCATION

SCALE 1:24000

MILES: 1 — 0 — 1

FEET: 1000 — 0 — 1000 — 2000 — 3000 — 4000 — 5000 — 6000 — 7000

KILOMETERS: 1 — 0 — 1

	4	5
9		11
14	15	

4 COVE CREEK
5 BASTIAN
9 HUTCHINSON ROCK
11 BIG BEND
14 NEBO
15 RURAL RETREAT

INDEX TO ADJOINING 7.5 MAPS

GARDEN MOUNTAIN, VIRGINIA

7.5 MINUTE SERIES

SHEET NUMBER 10 OF 15

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

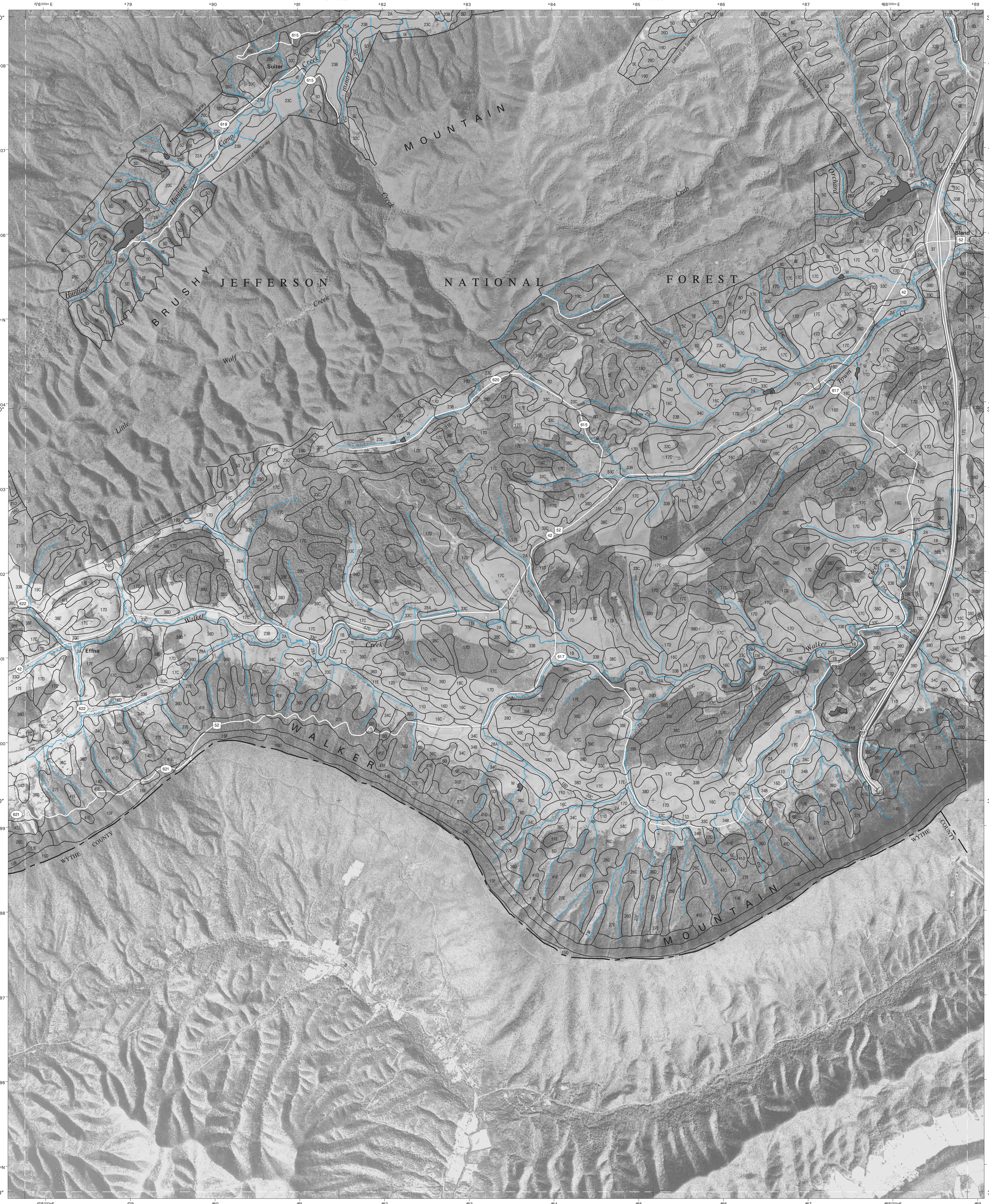
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

BLAND COUNTY, VIRGINIA
BIG BEND QUADRANGLE
SHEET NUMBER 11 OF 15

Joins sheet 4, Cove Creek

Joins sheet 5, Bastian

Joins sheet 6, Rocky Gap



Joins sheet 10, Garden Mountain

Joins sheet 12, Bland

Joins sheet 15, Rural Retreat

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from National Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotograph and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

INDEX TO ADJOINING 7.5 MAPS

4 COVE CREEK
5 BASTIAN
6 ROCKY GAP
10 GARDEN MOUNTAIN
12 BLAND
15 RURAL RETREAT

BIG BEND, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 11 OF 15

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

BLAND COUNTY, VIRGINIA
BLAND QUADRANGLE
SHEET NUMBER 12 OF 15

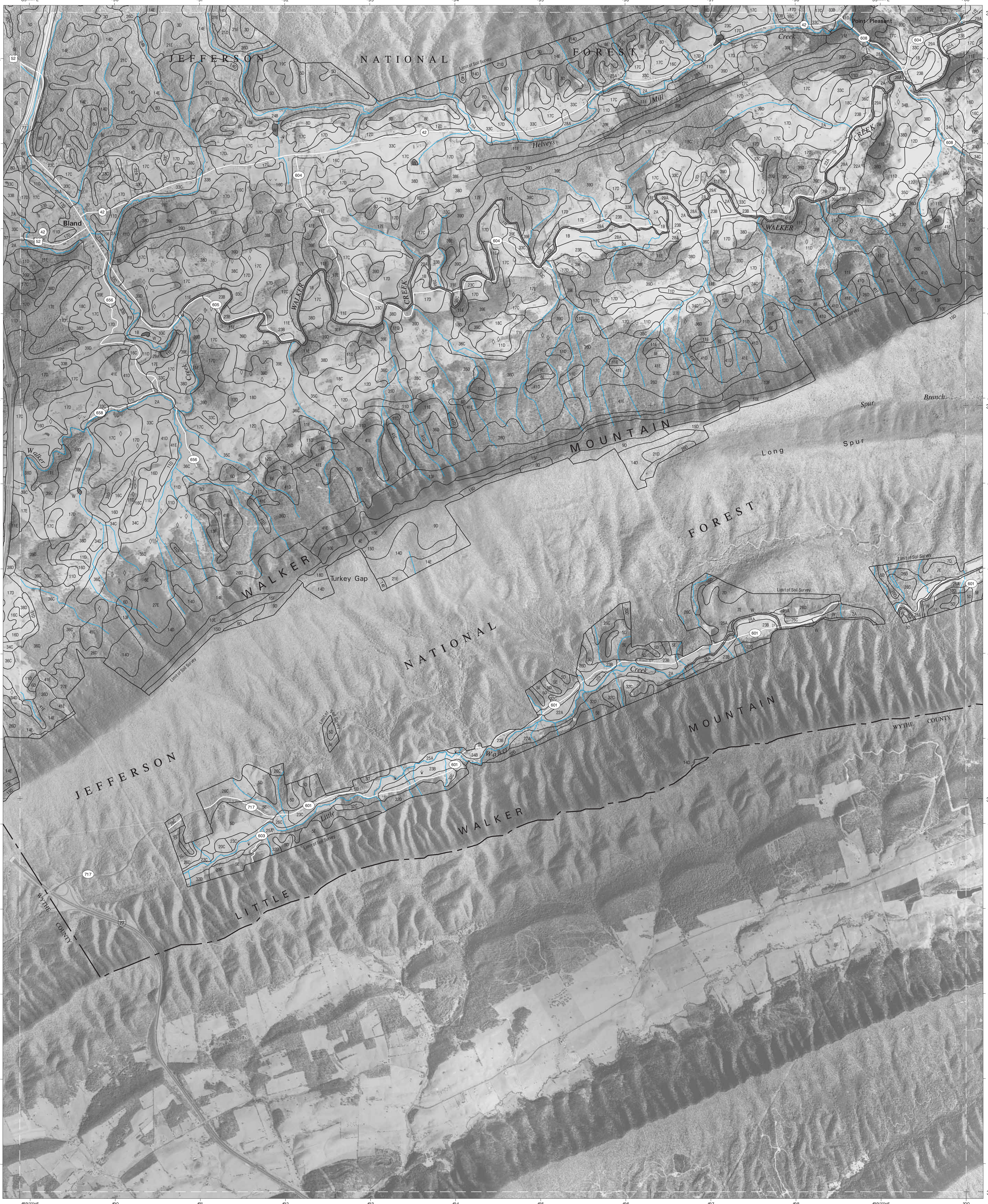
Joins sheet 5, Bastian

Joins sheet 6, Rocky Gap

Joins sheet 7, Mechanicsburg

Joins sheet 11, Big Bend

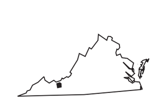
Joins sheet 13, Long Spur



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUADRANGLE LOCATION

SCALE 1:24000

MILES

1000 0 1000 2000 3000 4000 5000 6000 7000

FEET

1 0 1

KILOMETERS

5	6	7
11		13

5 BASTIAN
6 ROCKY GAP
7 MECHANICSBURG
11 BIG BEND
13 LONG SPUR

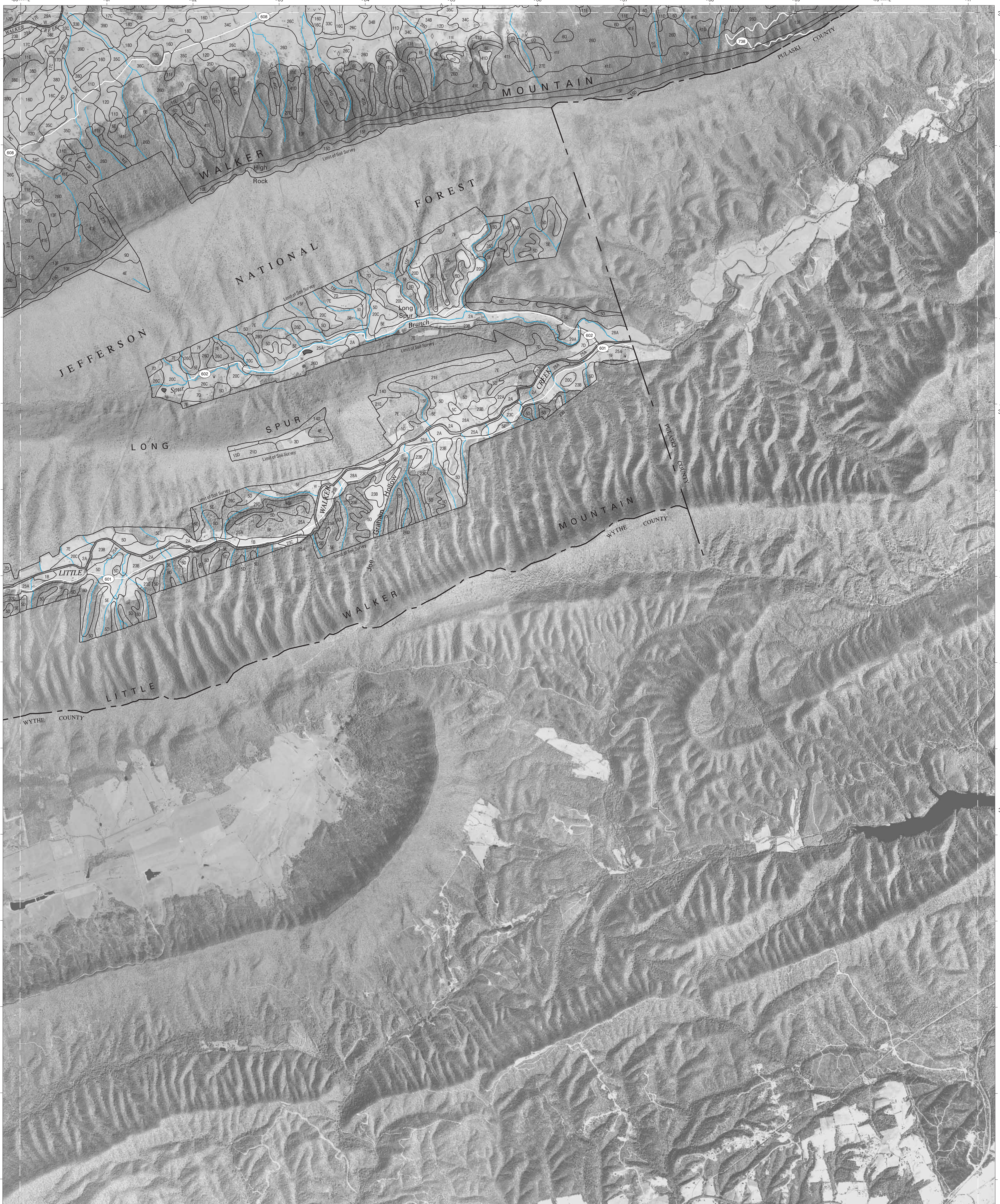
INDEX TO ADJOINING 7.5 MAPS

BLAND, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 12 OF 15

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

Joins sheet 6, Rocky Gap
Joins sheet 7, Mechanicsburg
Joins sheet 8, White Gate
Joins sheet 12, Bland



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

6	7	8
12		

6 ROCKY GAP
7 MECHANICSBURG
8 WHITE GATE
12 BLAND

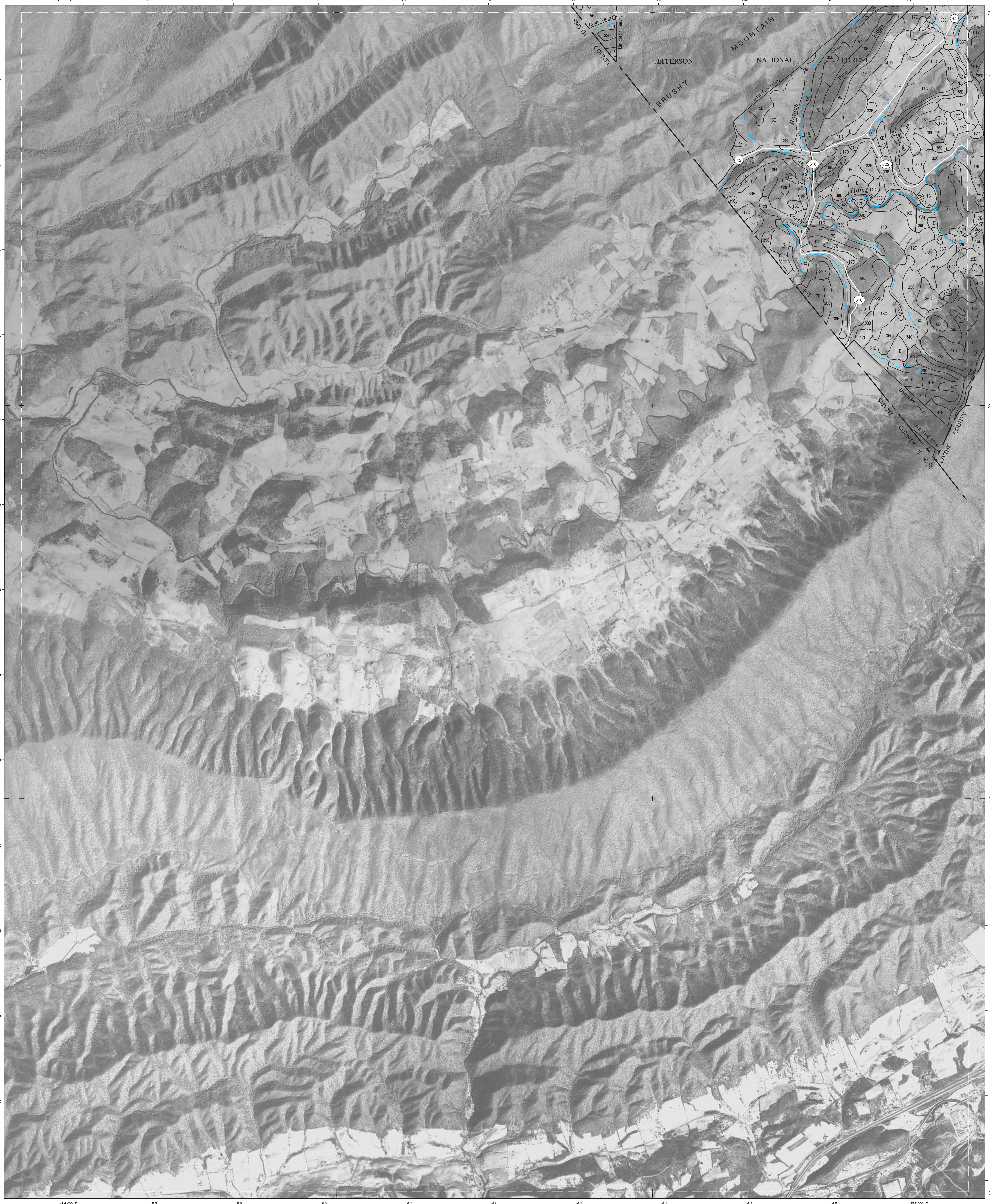
INDEX TO ADJOINING 7.5 MAPS

LONG SPUR, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 13 OF 15

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

BLAND COUNTY, VIRGINIA
NEBO QUADRANGLE
SHEET NUMBER 14 OF 15



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

9	10	
		15

9 HUTCHINSON ROCK
10 GARDEN MOUNTAIN
15 RURAL RETREAT

INDEX TO ADJOINING 7.5 MAPS

NEBO, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 14 OF 15

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

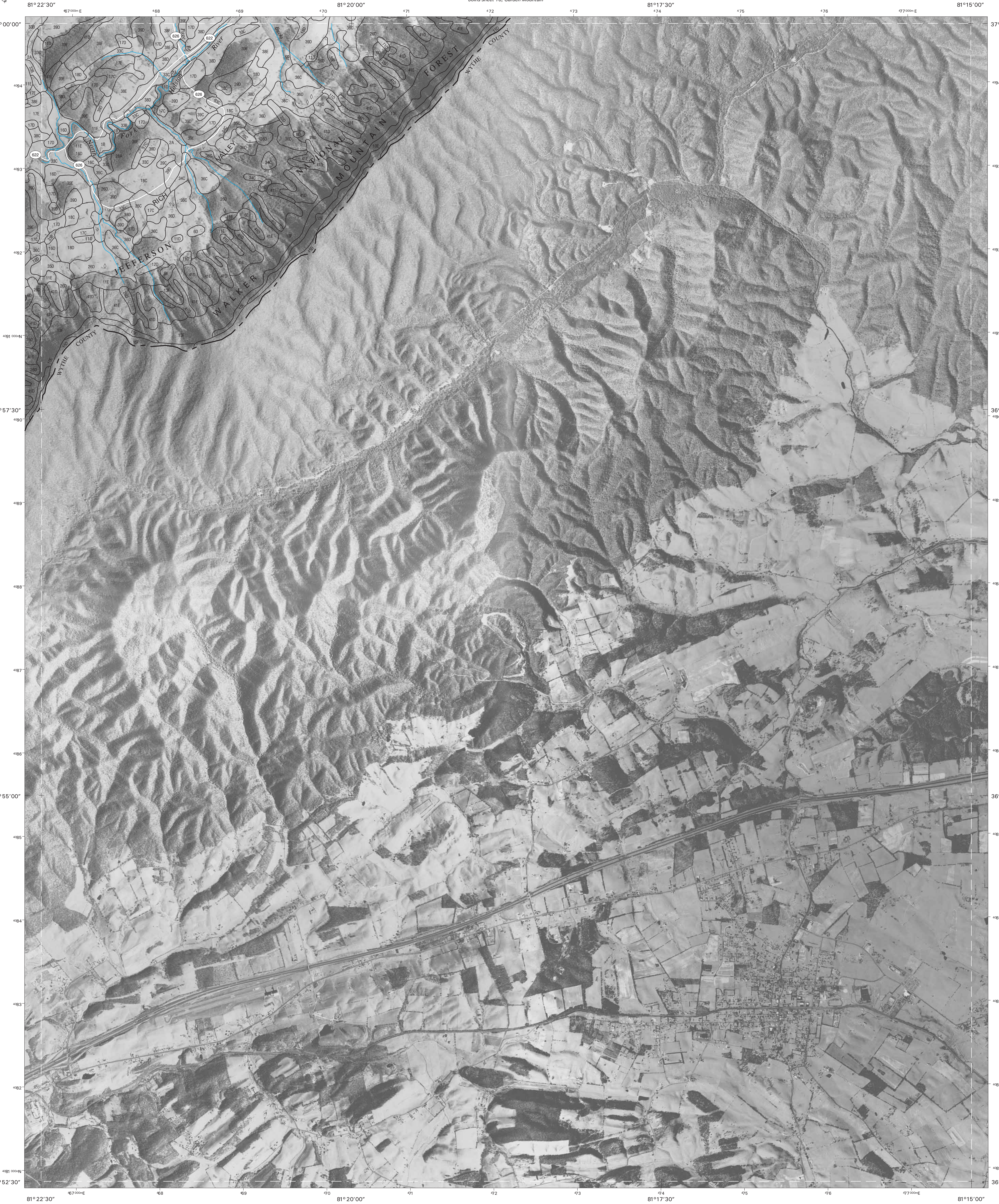
BLAND COUNTY, VIRGINIA
RURAL RETREAT QUADRANGLE
SHEET NUMBER 15 OF 15

Joins sheet 9, Hutchinson Rock

Joins sheet 10, Garden Mountain

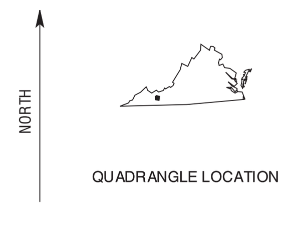
Joins sheet 11, Big Bend

Joins sheet 14, Nebo



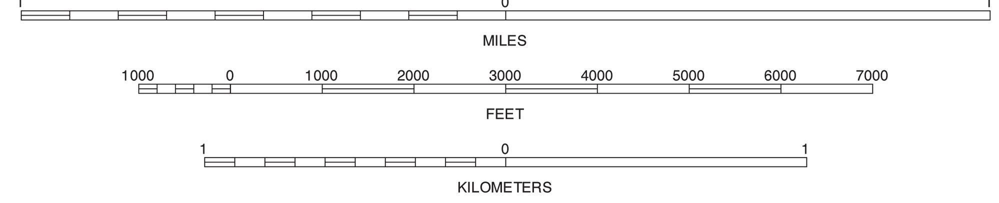
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1996-2000 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

SCALE 1:24000



9	10	11
14		

9 HUTCHINSON ROCK
10 GARDEN MOUNTAIN
11 BIG BEND
14 NEBO

INDEX TO ADJOINING 7.5 MAPS

RURAL RETREAT, VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 15 OF 15

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.